WESTERN BIRDS

Vol. 19, No. 1, 1988

SHOUT
SHARE
IT

WESTERN BIRDS

Quarterly Journal of Western Field Ornithologists

President: Tim Manolis, 808 El Encino Way, Sacramento, CA 95864

Vice-President: Narca A. Moore-Craig, P.O. Box 254, Lakeview, CA 92353

Treasurer/Membership Secretary: Howard L. Cogswell, 1548 East Avenue, Hayward, CA 94541

Recording Secretary: Jean-Marie Spoelman, 4629 Diaz Drive, Fremont, CA 94536

Circulation Manager: Jerry R. Oldenettel, 4368 37th Street, San Diego, CA 92105

Directors: Peter Gent, Virginia P. Johnson, John S. Luther, Guy McCaskie, Timothy Manolis, Robert McKernan, Narca Moore-Craig, Joseph Morlan, Janet Witzeman

Editor: Philip Unitt, 3411 Felton Street, San Diego, CA 92104

Associate Editors: Cameron Barrows, Tim Manolis, Narca A. Moore-Craig, Thomas W. Keeney

Layout Artist: Virginia P. Johnson

Photo Editor: Bruce Webb, 5657 Cazadero, Sacramento, CA 95822

Review Editor: Richard E. Webster, P.O. Box 6318, San Diego, CA 92106

Secretary, California Bird Records Committee: Don Roberson, 282 Grove Acre Ave., Pacific Grove, CA 93950

Editorial Board: Robert Andrews, Alan Baldridge, Andrew J. Berger, Laurence C. Binford, David F. DeSante, Jon L. Dunn, Richard Erickson, Kimball L. Garrett, Joseph R. Jehl, Jr., Ned K. Johnson, Virginia P. Johnson, Brina Kessel, Stephen A. Laymon, Paul Lehman, John S. Luther, Guy McCaskie, Joseph Morlan, Harry B. Nehls, Dennis R. Paulson, Stephen M. Russell, Oliver K. Scott, Ella Sorensen, Richard W. Stallcup, Charles Trost, Terence R. Wahl, Roland H. Wauer, Bruce Webb, Wayne C. Weber, Richard E. Webster

Membership dues, for individuals and institutions, including subscription to *Western Birds:* Patron, $1000; Life, $250; Supporting, $50 annually; Contributing, $25 annually; Regular, $14 U.S. ($17 outside U.S.) annually. Dues and contributions are tax-deductible to the extent allowed by law.

Send membership dues, changes of address, correspondence regarding missing issues, and orders for back issues and special publications to the Treasurer. Make checks payable to Western Field Ornithologists.

Back issues of *California Birds/Western Birds:* $15 per volume, $4.00 for single issues. Xerox copies of out of print issues (Vol. 1, No. 1; Vol. 2, Nos. 1 and 4; Vol. 6, No. 2): $4.50 each. *Checklist of the Birds of California:* $2.00 each, 10 or more $1.50 each. *Pelagic Birds of Monterey Bay, California:* $2.50 each, 10 or more $2.00 each, 40 or more $1.50 each. All postpaid.

Published July 29, 1988 ISSN 0045-3897

WESTERN BIRDS ADVERTISING RATES AND SPECIFICATIONS

Full page	4 x 6¾ inches	$60 per issue	$200 per year
Half Page	4 x 3⅜ inches	$40 per issue	$130 per year
Quarter Page	4 x 1 11/16 inches	$30 per issue	$110 per year

Offset printing, one column per page, 4 inches wide. Glossy, black and white photos are acceptable; half-tone screen size: 133 line. Photo-ready copy is requested. If this is not possible, extra charges for typesetting will be made as follows: $15 full page, $10 half page, $5 quarter page. Send copy with remittance to the Treasurer. Make checks payable to Western Field Ornithologists. A 15% commission is allowed for agencies.

WESTERN BIRDS

Volume 19, Number 1, 1988

PASSERINE MIGRATION ALONG THE INNER COAST RANGE OF CENTRAL CALIFORNIA

L. RICHARD MEWALDT, Avian Biology Laboratory, San Jose State University, San Jose, California 95192

SUSAN KAISER, 521 46th Street, Sacramento, California 95819

With mist nets and ground traps we sampled the spring and fall flows of land birds migrating along Mission Ridge, just southeast of the south tip of San Francisco Bay. Few such studies have been made of land-bird migration along the Pacific coast of North America. In northern California, the broadest-based of these is the annotated field list prepared by McCaskie et al. (1979), which presents graphically the relative abundance by months, hence the timing of migration, of all species known from that area. It was based on many years of records from the Middle Pacific Coast Region reports in *American Birds* and their back-up files. These files were initiated by Howard L. Cogswell in 1954 and are now maintained by the regional editors of the quarterly reports.

Several studies have reported the timing of migration at specific locations. Weston (1948) reported spring arrival dates of 15 species at Berkeley, California, for the years 1911 to 1947. Littlefield and McLaury (1973) reported on spring migration and arrival dates at Malheur National Wildlife Refuge in eastern Oregon. Stewart (1972) dealt with the timing of peak migration of several passerines in central coastal California, while Ralph (1971) and Stewart et al. (1974) demonstrated that unusually high numbers of young passerines of some species appear along the central California coast in fall migration. The most comprehensive of these specific location studies is the monograph of DeSante and Ainley (1980), which analyzed the origins of the transient avifauna of Southeast Farallon Island, California. For this transient avifauna they provide spring and fall dates of occurrence, numbers encountered on daily censuses, and numbers captured in mist nets and a Heligoland trap for 331 species for the years 1968 to 1976.

Other studies, such as Wolfson's (1945) pioneering work on the experimental manipulation of migration in juncos (*Junco hyemalis*), have dealt with single species. Johnson (1965, 1970, 1973) studied the migratory patterns of Hammond's Flycatcher (*Empidonax hammondii*) and the Western Flycatcher (*E. difficilis*). There is also the broad spectrum of studies dealing

with the migratory biology of the White-crowned Sparrow (*Zonotrichia leucophrys*), such as those of Farner (1955), Mewaldt et al. (1964), Cortopassi and Mewaldt (1965), King et al. (1965), DeWolfe et al. (1973), and King and Mewaldt (1981a,b).

Several workers have discussed apparent differences between passerine migration in the eastern and western parts of the continent (e. g., Paxton 1965, Lowery and Newman 1966, DeBenedictis 1967). In western North America the movements of the fewer migratory land-bird species are obscured by a more rugged topography and by more complex weather patterns. Western observers do not often see the massive landfalls of grounded migrants that are seen in the mid-western and eastern parts of North America. These are usually correlated with certain weather conditions. Especially in central California there are few strictly passage migrants. Here along the Pacific Coast the presence of resident components (winter, summer, permanent) of many species tends to obscure migratory movements by the migratory components of those same species.

We report on a two-year study of the abundance and timing of passage of migrant land birds along the inner Coast Range of central California. Using mist nets and traps we captured, banded, and recaptured more than 14,000 individual birds in two spring and two fall seasons from August of 1970 to May of 1972. We have compared these findings with those reported for the nearby Farallon Island station of Point Reyes Bird Observatory (DeSante and Ainley 1980).

STUDY AREA

Our studies were on the E. O. Wool Ranch on Mission Ridge, a northwest extension of the Diablo Range lying 55 km east of the Pacific Ocean and overlooking the south end of San Francisco Bay (Figure 1). Our operations were centered in a valley 615 m above sea level, just east of the 800-meter crest of Mission Ridge and astride the boundary between Santa Clara and Alameda counties. The surrounding physiography consists of grassy rolling hills, interspersed to the east with steep canyons, wooded on their north- and east-facing slopes, and to the west with the grassy uplands of Mission Ridge. The west slope of Mission Ridge drops abruptly to South San Francisco Bay near the city of Fremont. Land east of the Wool Ranch drops off to Calaveras Reservoir (water surface elevation 233 m), beyond which additional ridges of the Diablo Range rise to more than 1000 m.

The study area is characterized by warm, dry summers and cool, rainy winters. Although the Pacific Ocean and San Francisco Bay exert a moderating influence on temperature, the effect is somewhat diminished at higher elevations. In our study area temperatures were from 3 to 6°C higher in summer and lower in winter than those recorded in nearby Milpitas (elevation 33 m). Thermograph records maintained during operations showed a high of 41°C (10 Aug 1971) and a low of −2°C (2 Feb 1972). Especially in spring and early summer, thermal inversions prevent ocean fog flowing inland from reaching high ground. Mission Ridge then stands out at dawn, as though an island or peninsula, above the surrounding fog, which often totally obscures areas below 500 m elevation.

Rainfall records, maintained by the Wool family from 1942 to 1972, reveal a yearly mean of 66 cm (range 35 to 102 cm). This amount is approximately double that falling on the south end of San Francisco Bay 10 km to the west. Virtually all precipitation falls from October to April, with mean highs of 13 cm in both December and January. Precipitation, including some snow, was substantially higher than average in the 1970-71 winter season and substantially lower than average in the 1971-72 winter season.

The uplands of the study area support open grassland, oak woodland, and chaparral. Grassland, occupying the ridges and the more exposed south- and west-facing slopes, is composed primarily of annual grasses and herbs, with wild oats (*Avena fatua*) predominating. Oak woodland occupies the north- and east-facing slopes. This woodland consists principally of Coast Live Oak (*Quercus agrifolia*) and Valley Oak (*Q. lobata*), with California Bay

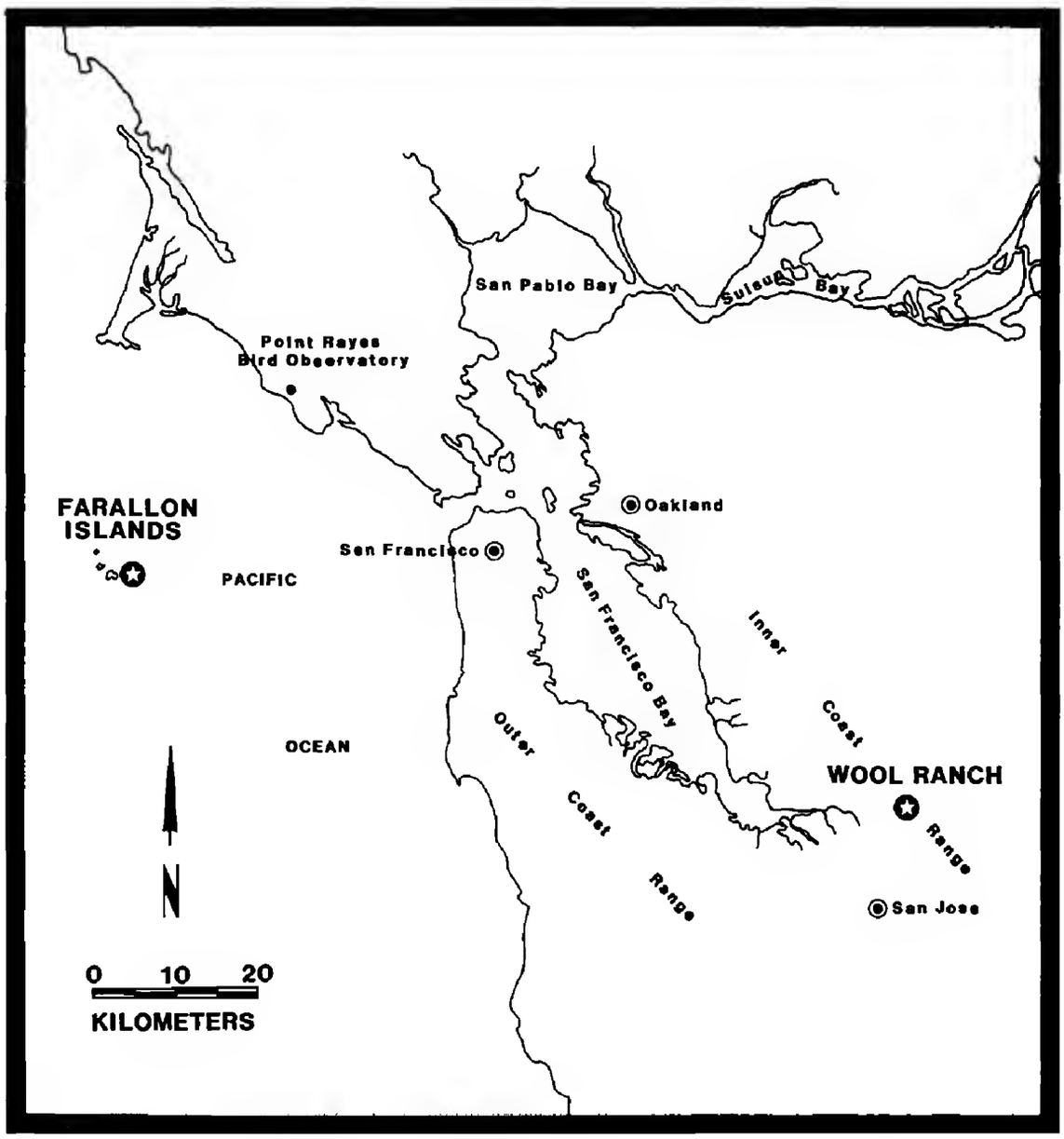


Figure 1. Greater San Francisco Bay area, showing the location of the Wool Ranch on Mission Ridge and the Farallon Islands.

(*Umbellularia californica*) and California Buckeye (*Aesculus californicus*) as associates. California Sycamores (*Platanus racemosa*) and Bigleaf Maples (*Acer macrophyllum*) grow at springs and along resulting streams. Isolated areas of chaparral, some composed mostly of Chamise (*Adenostoma fasciculatum*), occur on the dry, rocky slopes facing Calaveras Reservoir. These and most other areas of chaparral contain substantial amounts of Poison Oak (*Toxicodendron diversilobum*), Toyon (*Heteromeles arbutifolia*), Coyote Bush (*Baccharis pilularis*), Coffeeberry (*Rhamnus californicus*), Sticky Monkey Flower (*Mimulus guttatus*), ceanothus (*Ceanothus* sp.), and small Coast Live Oaks.

Most of the ranch (about 530 ha), as well as the surrounding 3500 ha of undeveloped regional park and watershed lands, were grazed by cattle. The immediate study area (Figure 2) was dominated by a 20-ha irrigated (well water) orchard of prunes (*Prunus* sp.) and walnuts (*Juglans* sp.). A usually dry gully, draining from north to south through the eastern portion of the orchard, contained intermittent patches of willows (*Salix* sp.), small Coast Live Oaks, Coyote Bushes, and Poison Oak (Figure 3). This gully, terminating in a 0.1-ha permanent stock pond with willows on two sides, proved a substantial attractant to residents and grounded migrants. Another important attractant was a large wooden water tank, continually seeping, at the southwest corner of the orchard and at the base of a hill wooded with Coast Live Oak, California Bay, and understory clumps of Coffeeberry. Surface water on the higher portions of Mission Ridge was usually restricted to the immediate vicinity of the orchard and ranch buildings, except for a few springs usually associated with a stock-watering device or pond. In the wet spring of 1971 there were scattered vernal pools on the higher portions of the ridge.

METHODS

Capture Methods and Data Collection

Birds were captured with Japanese mist nets and Potter traps. The basic netting unit, a net-hour, consisted of a 4-panel nylon mist net 12 m long and 2 m high set with the bottom trammel line about 0.15 m above the ground and operated for 1 hour. At several sites a second net was joined to and mounted above the ground-level net and elevated with lanyards and pulleys on guyed 5-m poles to a height of about 4.15 m. Such an arrangement, although probably not twice as efficient as a single net run for 1 hour, was counted as 2 net-hours. Nets were made of 70-denier black nylon yarn with stretched 36-mm mesh or occasionally with 30-mm mesh.

Nets were placed in lanes cut across the willow-dominated draw, in the prune orchard, and at strategic locations under trees adjacent to the leaking water tank (Figure 2). The nets in the willow draw and at the water tank, consisting of 20 nets at 7 sites, were operated nearly constantly from season to season. The nets in the orchard and nets set occasionally at sites up to 300-400 m from the orchard were run opportunistically. Opened 20 minutes before sunrise and closed shortly before noon, nets were operated daily during the spring and fall periods of migration and intermittently in other seasons — except during June and July when none was operated. Net hours and numbers of birds caught at each site were logged.

Four-celled welded-wire Potter traps (each cell 20 × 25 × 20 cm high) were baited with chick scratch and placed in nearby brushy areas associated with oak woodland and along the edge between grassland and chaparral. A trap-hour was a four-celled trap open for 1 hour. Trap lines, consisting of 10 to 40 traps at 4 to 15 stations, were run irregularly, but most often in early

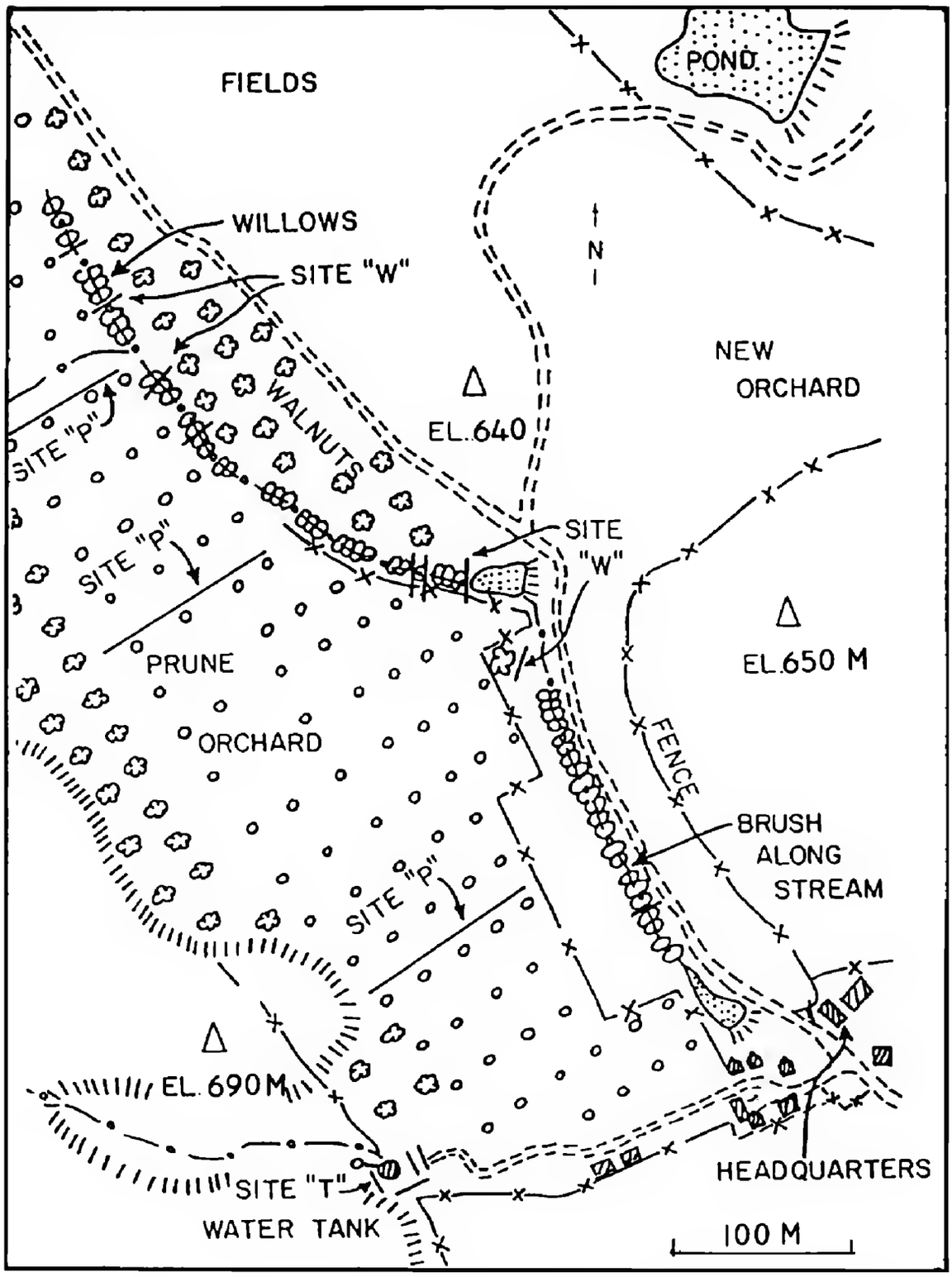


Figure 2. The main study area on the Wool Ranch. Mist net locations on the several sites are indicated by heavy solid lines.

spring and late fall, when they were operated 2 to 4 days a week. Trap hours and the numbers of birds caught at each site were logged.

All birds except hummingbirds (tail-clipped to detect recaptures) were banded with U.S. Fish and Wildlife Service aluminum bands. Data recorded on each capture and recapture included species, age, sex when possible, hour of capture, site of net or trap, wing chord (mm), weight (g), and, in appropriate season, reproductive condition (brood patch, cloacal protuberance, etc.), condition of molt, amount of fat, skull pneumatization, and standard notes related to determination of age and sex. Photographs were taken of rare and unusual species.

Project Personnel

Nets and traps were operated and most of the banding and data collection were done by advanced undergraduate and graduate students enrolled in Field Studies in Bird Migration at San Jose State University. All had either taken Ornithology or were taking it concurrently. Several participated during all four migratory seasons. Four to six students each day, in rotation from a roster of 14 to 16, worked seven days of each week during spring and fall migration. When heavy waves of migrants appeared or special problems arose, additional help was summoned by telephone. Daily crew chiefs were selected from among those with greater experience.

RESULTS AND DISCUSSION

The 14,159 birds of 109 taxa (107 species including 2 with 2 races distinguished in each) were captured and recaptured 22,671 times in two fall and two spring seasons from August 1970 to May 1972 (Table 1). Only six species (two hummingbirds, two flycatchers, and two warblers) are strictly passage migrants through the San Francisco Bay region. The rest are residents of one kind or another in the greater San Francisco Bay region. Our determination of the migratory status of central California residents was based in part on whether or not the species in question appears on the Farallon Islands as a migrant (DeSante and Ainley 1980). Supplemental data, including the capture of four additional species, were obtained in the spring of 1970 and from sporadic field work from the fall of 1972 to 1979 (Appendix).

The data are biased in two ways that limit effective application of biometrical analyses. (1) Many net lanes and trap lines were changed from season to season to maximize capture efficiency. (2) Operations could not be continued beyond 31 May in the springs of either year. Thus we had no data for June and coverage of July and August was weak. Nonetheless, the data provide a valuable sample of land bird migration through the south San Francisco Bay region in the early 1970s. Kaiser (1976) reported further detailed information on the subjects we cover and other items such as median migration dates, age ratios, fat deposition, and correlations with weather.

Captures in Nets

Of 14,338 captures in mist nets, 9392 were first encounters with migrants, 2108 were first encounters with resident species, and 2838 were recaptures

Figure 3. Willow draw, where most migrants were captured, extends upward and to the right from the pond. Photo taken 20 February 1972 shows prune trees on the left and walnuts on the right A tethered mist net pole may be seen at the edge of the pond The red and white fence posts in the lower center were part of a temporary fencing to keep cows from the net lanes

Table 1 Status and Number of First Captures of the 109 Taxa of Birds Captured in Mist Nets and Potter traps on the Wool Ranch from August 1970 through May 1972

Species		Number
Resident with no apparent migratory component:		
California Quail	*Callipepla californica*	199
Western Screech-Owl	*Otus kennicottii*	2
Nuttall's Woodpecker	*Picoides nuttallii*	20
Downy Woodpecker	*Picoides pubescens*	2
Hairy Woodpecker	*Picoides villosus*	6
Steller's Jay	*Cyanocitta stelleri*	64
Scrub Jay	*Aphelocoma coerulescens*	49
Yellow-billed Magpie	*Pica nuttalli*	7
Chestnut-backed Chickadee	*Parus rufescens*	55
Plain Titmouse	*Parus inornatus*	105
Bushtit	*Psaltriparus minimus*	136
White-breasted Nuthatch	*Sitta carolinensis*	24
Bewick's Wren	*Thryomanes bewickii*	65
Western Bluebird	*Sialia mexicana*	30
Wrentit	*Chamaea fasciata*	6
California Thrasher	*Toxostoma redivivum*	17
Brown Towhee	*Pipilo fuscus*	147
Rufous-crowned Sparrow	*Aimophila ruficeps*	10
Resident with a migratory component:		
Cooper's Hawk	*Accipiter cooperii*	3
American Kestrel	*Falco sparverius*	5
Mourning Dove	*Zenaida macroura*	83
Long-eared Owl	*Asio otus*	1
Anna's Hummingbird	*Calypte anna*	42
Acorn Woodpecker	*Melanerpes formicivorus*	5
Northern Flicker	*Colaptes auratus*	48
Black Phoebe	*Sayornis nigricans*	17
Horned Lark	*Eremophila alpestris*	118
Red-breasted Nuthatch	*Sitta carolinensis*	1
Brown Creeper	*Certhia americana*	11
Rock Wren	*Salpinctes obsoletus*	1
Winter Wren	*Troglodytes troglodytes*	8
Golden-crowned Kinglet	*Regulus satrapa*	4
Hermit Thrush	*Catharus guttatus*	994
American Robin	*Turdus migratorius*	95
Northern Mockingbird	*Mimus polyglottos*	27
Phainopepla	*Phainopepla nitens*	1
Loggerhead Shrike	*Lanius ludovicianus*	5
European Starling	*Sturnus vulgaris*	47
Hutton's Vireo	*Vireo huttoni*	30
Orange-crowned Warbler	*Vermivora celata*	387
Audubon's Warbler	*Dendroica coronata audubonl*	149
Common Yellowthroat	*Geothlypis trichas*	4
Rufous-sided Towhee	*Pipilo erythrophthalmus*	177
Lark Sparrow	*Chondestes grammacus*	713
Sage Sparrow	*Amphispiza belli*	1

Table 1 (Continued)

Species		Number
Savannah Sparrow	*Passerculus sandwichensis*	130
Song Sparrow	*Melospiza melodia*	2
Oregon Junco	*Junco hyemalis* sspp.	1516
Red-winged Blackbird	*Agelaius phoeniceus*	184
Western Meadowlark	*Sturnella neglecta*	12
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*	1
Brewer's Blackbird	*Euphagus cyanocephalus*	53
Brown-headed Cowbird	*Molothrus ater*	1
Purple Finch	*Carpodacus purpureus*	280
House Finch	*Carpodacus mexicanus*	1088
Pine Siskin	*Carduelis pinus*	1
Lesser Goldfinch	*Carduelis psaltria*	256
Lawrence's Goldfinch	*Carduelis lawrencei*	12
American Goldfinch	*Carduelis tristis*	61
Summer resident:		
Allen's Hummingbird	*Selasphorus sasin*	10
Olive-sided Flycatcher	*Contopus borealis*	3
Western Wood-Pewee	*Contopus sordidulus*	33
Western Flycatcher	*Empidonax difficilis*	701
Ash-throated Flycatcher	*Myiarchus cinerascens*	14
Western Kingbird	*Tyrannus verticalis*	1
Violet-green Swallow	*Tachycineta thalassina*	1
House Wren	*Troglodytes aedon*	27
Swainson's Thrush	*Catharus ustulatus*	850
Solitary Vireo	*Vireo solitarius*	10
Warbling Vireo	*Vireo gilvus*	210
Yellow Warbler	*Dendroica petechia*	148
Black-throated Gray Warbler	*Dendroica nigrescens*	8
MacGillivray's Warbler	*Oporornis tolmiei*	74
Wilson's Warbler	*Wilsonia pusilla*	461
Yellow-breasted Chat	*Icteria virens*	5
Western Tanager	*Piranga ludoviciana*	66
Black-headed Grosbeak	*Pheucticus melanocephalus*	118
Lazuli Bunting	*Passerina amoena*	43
Chipping Sparrow	*Spizella passerina*	494
Black-chinned Sparrow	*Spizella atrogularis*	1
Grasshopper Sparrow	*Ammodramus savannarum*	1
Bullock's Oriole	*Icterus galbula bullockii*	55
Winter resident:		
Sharp-shinned Hawk	*Accipiter striatus*	12
Red-breasted Sapsucker	*Sphyrapicus ruber*	22
Ruby-crowned Kinglet	*Regulus calendula*	259
Varied Thrush	*Ixoreus naevius*	12
Water Pipit	*Anthus spinoletta*	1
Cedar Waxwing	*Bombycilla cedrorum*	43
Myrtle Warbler	*Dendroica coronata coronata*	21
Townsend's Warbler	*Dendroica townsendi*	4
Fox Sparrow	*Passerella iliaca*	236
Lincoln's Sparrow	*Melospiza lincolnii*	41

Table 1 (Continued)

Species		Number
White-throated Sparrow	*Zonotrichia albicollis*	3
Golden-crowned Sparrow	*Zonotrichia atricapilla*	1753
Puget Sound White-crowned Sparrow	*Z. leucophrys pugetensis*	203
Gambel's White-crowned Sparrow	*Z. l. gambelii*	344
Migratory with no resident component:		
Calliope Hummingbird	*Stellula calliope*	10
Rufous Hummingbird	*Selasphorus rufus*	168
Willow Flycatcher	*Empidonax traillii*	72
Hammond's Flycatcher	*Empidonax hammondii*	8
Nashville Warbler	*Vermivora ruficapilla*	25
Hermit Warbler	*Dendroica occidentalis*	8
Vagrant, no resident or migratory component:		
Gray Flycatcher	*Empidonax wrightii*	11
Bell's Vireo	*Vireo bellii*	1
Blackburnian Warbler	*Dendroica fusca*	1
American Redstart	*Setophaga ruticilla*	1
Green-tailed Towhee	*Pipilo chlorurus*	1
Black-throated Sparrow	*Amphispiza bilineata*	2
Slate-colored Junco	*Junco hyemalis hyemalis*	3
Additional species captured in the supplemental periods (see Appendix)		
Killdeer (resident)	*Charadrius vociferus*	3
Say's Phoebe (winter resident)	*Sayornis saya*	1
Canyon Wren (resident)	*Catherpes mexicanus*	1
Tennessee Warbler (vagrant)	*Vermivora peregrina*	1

(Table 2). Most of the recaptures were of resident species. The 3664 spring migrants were caught in mist nets at a rate of 24 per 100 net hours (15,116 net hours), whereas fall migrants, numbering 5728, were caught at a rate of 38 per 100 net hours (14,877 net hours). This 56% increase in numbers of fall migrants over spring migrants, resulting from approximately equal spring and fall efforts, is consistent with an expectation of greater numbers following summer reproduction. Similarly, the 153% increase in late summer and fall nonmigrants or residents (597 Jan-May versus 1511 Aug-Dec) roughly fulfills our expectation of encounters with dispersing juveniles of resident species.

Captures in Traps

Of 8333 captures in Potter traps, 2659 were first encounters and 5674 were recaptures (Table 2). Traps captured mostly granivorous species, including both migratory winter residents such as Golden-crowned Sparrows and residents such as Lark Sparrows. The trend seen in mist net captures toward more captures in the late summer and fall was even greater with trap-caught birds. The 749 spring captures (9 per 100 trap hours) were much less

Table 2 Captures in Mist Nets and Potter Traps, August 1970 to May 1972, by Months and Seasons

Item	Jan	Feb	Mar	Apr	May	Spring total	Aug	Sep	Oct	Nov	Dec	Fall total	Total
All captures	191	602	2746	2987	2721	9247	1786	3089	6067	2117	365	13,424	22,671
First captures	85	248	864	1456	2357	5010	1353	2243	4369	1044	140	9149	14,159
Recaptures	106	354	1882	1531	364	4237	433	846	1698	1073	225	4275	8512
Captures in nets	24	321	970	1444	2588	5347	1261	2626	4327	756	21	8991	14,338
Net hours	48	226	2926	5424	6492	15,116	2321	5604	5859	1032	61	14,877	29,993
(Per 100 net-hrs)	(50)	(142)	(33)	(27)	(40)	(35)	(54)	(47)	(74)	(73)	(34)	(60)	(48)
Migrants in nets	4	35	483	1136	2006	3664	591	1578	3068	474	17	5728	9392
(Per 100 net-hrs)	(8)	(15)	(17)	(21)	(31)	(24)	(25)	(28)	(52)	(46)	(28)	(39)	(31)
Non-migrants in nets	11	138	78	50	320	597	396	520	466	127	2	1511	2108
(Per 100 net-hrs)	(23)	(61)	(3)	(1)	(5)	(4)	(19)	(9)	(8)	(12)	(3)	(10)	(7)
Recaptures in nets	9	148	409	258	260	1084	274	528	795	155	2	1754	2838
(Per 100 net-hrs)	(19)	(65)	(14)	(5)	(4)	(7)	(12)	(9)	(14)	(15)	(3)	(12)	(9)
Captures in traps	167	281	1776	1543	135	3902	525	463	1738	1357	348	4431	8333
Trap hours	235	426	2449	4162	1244	8516	447	637	2051	1702	1463	6300	14,816
(Per 100 trap-hrs)	(71)	(66)	(73)	(37)	(11)	(46)	(117)	(73)	(85)	(80)	(24)	(70)	(56)
New captures in traps	70	75	303	270	31	749	366	145	835	443	121	1910	2659
(Per 100 trap-hrs)	(30)	(18)	(12)	(6)	(2)	(9)	(82)	(23)	(41)	(26)	(8)	(30)	(18)
Recaptures in traps	97	206	1473	1273	104	3153	159	318	903	918	223	2521	5674
(Per 100 trap-hrs)	(41)	(48)	(60)	(31)	(8)	(37)	(36)	(50)	(44)	(54)	(15)	(40)	(38)

than half the 1910 late summer and fall captures (30 per 100 trap hours). Part of this substantial difference was due to dispersing juveniles of residents such as Lark Sparrows and Brown Towhees. Another component adding to fall numbers was the banding of newly arrived winter residents, such as Golden-crowned Sparrows, including substantial numbers of juveniles raised in Canada and Alaska. Because these wintering birds were still present in the spring, they did not contribute to spring counts of newly banded birds.

Although most species were caught almost exclusively in nets (e. g., flycatchers, thrushes, and warblers) or traps (e. g., California Quail, Horned Larks, and Lark Sparrows), a few, such as Golden-crowned and White-crowned Sparrows, Oregon Juncos, Fox Sparrows, towhees, and jays were caught in both nets and traps.

Post-breeding Dispersal

Experience (Mewaldt unpublished, DeSante and Geupel 1987) makes it clear that dispersal by juveniles and post-breeding wandering by adults of local breeding species begins as early as late May (e. g., Orange-crowned Warbler, see below) and increases in volume through June, July, and August. These post-breeding movements were evident on Mission Ridge (Table 3) in August and September for resident species such as Steller's and Scrub jays, Chestnut-backed Chickadees, and Brown Towhees, which probably lack a migratory component. Numbers of dispersing Rufous-sided Towhees and Oregon Juncos captured were supplemented by migrants of each species beginning in September. Dispersal of juveniles and local winter wandering by Lark Sparrows and House Finches certainly blended and may prove difficult to distinguish. The lack of data from June, July, and early August makes further discussion of dispersal unrewarding.

Spring and Fall Migration

The arrival, approximate duration, and peak of passage of spring migrants captured in significant numbers are displayed for both 1971 and 1972 in Table 4. It is evident from the numbers captured in the final six days of May, however, that some species must have continued as birds of passage on Mission Ridge into the first week or two of June. Noteworthy in this category were Western Flycatchers, Swainson's Thrushes, Warbling Vireos, Orange-crowned Warblers, Yellow Warblers, Townsend's Warblers, MacGillivray's Warblers, Wilson's Warblers, Western Tanagers, Black-headed Grosbeaks, and Lazuli Buntings. Clearly, some northern or mountain populations of these species were still migrating in late May and early June while local populations were already nesting. These 11 species have central California populations that regularly begin nesting in April or early May (e. g., Grinnell and Wythe 1927, Sibley 1952, Stewart 1972, Verner and Boss 1980). Noteworthy is the Orange-crowned Warbler, of which no fewer than 30% of the 88 captured 11-31 May were recently fledged birds.

The timing, approximate duration, and peak of passage of these same species are displayed in Table 5 for the fall seasons of both 1970 and 1971. Coverage of the month of August was weak, and the August data are complicated by probably including locally raised, pre-migratory, dispersing juveniles. Species probably subject to this complication are the Northern

Table 3 New Captures of Selected Local Breeders in Postbreeding Dispersal

	Aug					Sep						Oct						Nov	Dec
Species	1-10	11-15	16-20	21-25	26-31	1-5	6-10	11-15	16-20	21-25	26-30	1-5	6-10	11-15	16-20	21-25	26-31	1-30	1-31
Western Wood Pewee		4	3	1	2		4	4		2		2							
Steller's Jay		7	2	5	13	9	4	1		7	4	1		2	3	2	3	1	
Scrub Jay		3	3	4	7	1	4	4	3	2	4		1			2		2	1
Chestnut-backed Chickadee		2	6	2	1	4	7	6	6	5	2	2	1	1	1				
Plain Titmouse		14	2	3	5	4	1		3	1	3	4		5	2	1	5	2	
Bushtit		14	2	2	4	13	2	1	4	4	11			11	6		11	4	
Brown Creeper		2	1		2			1								1		1	
Bewick's Wren	1	4	2	1	6	8	7	4	7	3	3	6	6	1	1	1		2	
Hutton's Vireo			1	3	4			2	4		3	3		2	2		2	1	
Rufous-sided Towhee		14	4	2	11	5	2	3	6	4	5	9	5	7	10	10	5	19	6
Brown Towhee		8	6	6	10	8	3	3	5	7	2	5	9	4	8	1	3	19	4
Lark Sparrow		75	138	82	46	32	44	23	36	14	9	11	17	16	19	20	17	28	4
Oregon Junco	9	15	22	6	6	8	9	17	19	13	17	52	32	56	123	94	174	289	25
Rufous-crowned Sparrow		3		2	1	1	1		1			1							
House Finch	1	35	63	16	24	57	76	87	67	25	28	41	14	36	92	114	87	54	
Net hours	46	372	428	558	917	823	979	888	933	931	1050	986	1078	1066	968	1010	751	833	61
Trap hours	63	55	196	81	52	60	60	65	187	149	116	169	198	204	411	536	533	1702	1463

Table 4 New Captures of Selected Spring Migrants

Species	Jan	Feb	Mar						Apr						May					
	1-31	1-28	1-5	6-10	11-15	16-20	21-25	26-31	1-5	6-10	11-15	16-20	21-25	26-30	1-5	6-10	11-15	16-20	21-25	26-31
Calliope Hummingbird										1		2	3	3			1			
Rufous Hummingbird		1	2	2	4	5	5	9	9	29	18	27	19	18	5	5	7	2		1
Red-shafted Flicker						1			1	2										
Willow Flycatcher																1		1		3
Western Flycatcher						4		1	1		1	9	4	4	9	4	33	7	11	34
Ruby-crowned Kinglet	2		1	1	1		2	1	6	2	1	5	1	1	4					
Swainson's Thrush														2	19	35	146	85	203	231
Hermit Thrush			1	1		1	6	4	6	3	7	5	5	19	6	1	1			
Northern Mockingbird						1	1	2	1	1						3		1	1	
Warbling Vireo					1		1					3	2	2	9	7	30	17	35	36
Orange-crowned Warbler			3	3	17	19	14	10	8	26	16	32	16	33	33	17	31	24	22	11
Nashville Warbler										2	2	1	1	3	8	4	1	1		
Yellow Warbler															3		5	7	26	53
Audubon's Warbler	1	5		3	4	4		2	7	8	4	7	9	8	1	1	1			
Black-throated Gray Warbler												2	1	1						
Townsend's Warbler												2			4	5	6	5	4	15
Hermit Warbler																1	5	1	1	
MacGillivray's Warbler										1		1	3	3	8	5	22	1	7	14
Wilson's Warbler							1		1	1		2	3	24	46	38	128	25	50	90
Western Tanager														1	1	1	5		2	5
Black-headed Grosbeak												2			7	12	16	7	11	9

Lazuli Bunting														1			1	4	1	3
Chipping Sparrow					1	1	2	4	5	8	8	3	10	8	7	12	8	7	6	4
Savannah Sparrow	31	11	1	3	2	3	5	4	4	2					2	1				
Fox Sparrow		1			1		1	1	4	1	1	4	2	3	1					
Lincoln's Sparrow				1		1	3				2	8		2						
Golden-crowned Sparrow		44	4	8	13	26	18	6	10	24	14	29	32	34	3	2				
Puget Sound White-crowned Sparrow							3	4	6	16	9	14	13	5	1					
Gambel's White-crowned Sparrow						2			7	5	7	7	6	28	3	1	1			
Bullock's Oriole								1			1	7	4	6	4	12	8	1	2	5
Purple Finch		29	15	17	25	15	3	27	32	15	12						1			
Lesser Goldfinch		3		4	2	2	6	3	3	10	4	5	3	1	4	8	8	1	6	5
American Goldfinch											1	1	27		2		1	1		
Net hours	48	226	259	337	394	444	578	914	821	1032	857	881	833	1000	1057	1174	1365	953	978	965
Trap hours	235	426	194	369	295	752	626	813	674	714	680	735	708	651	354	529	183	139	39	0

Table 5 New Captures of Selected Fall Migrants

	Aug					Sep						Oct						Nov	Dec
Species	1-10	11-15	16-20	21-25	26-31	1-5	6-10	11-15	16-20	21-25	26-30	1-5	6-10	11-15	16-20	21-25	26-31	1-30	1-31
Red-shafted Flicker						1					4	7	10	10	6	1	2	3	
Willow Flycatcher				8	22	7	5	6	10	7	2								
Western Flycatcher	1	4	14	23	90	53	48	32	165	113	12	18	4	1	1				
Ruby-crowned Kinglet										2	5	24	37	39	53	29	14	28	
Swainson's Thrush				1	2	3	8	12	22	31	9	27	8	4	2				
Hermit Thrush							1		3	22	45	217	195	133	134	59	53	65	1
Northern Mockingbird			2	2		1	1		1			2	1	3	3				
Warbling Vireo		4	1	1	9	12	10	6	9	7	1	5	2						
Orange-crowned Warbler		3	2				7	10	5	11	2	3	3	5			1		
Nashville Warbler						2													
Yellow Warbler			1		1	5	8	13	5	11	5	4	1						
Audubon's Warbler									1		7	15	27	8	11	5	6	4	
Black-throated Gray Warbler								1	1		1	1							
Townsend's Warbler							1			1						1			
MacGillivray's Warbler			1	1		1	1		2	2				1					
Wilson's Warbler			1	1	5	4	4	7	10	5	5	8	2						
Western Tanager		1	1	1	4	3	1	3	5	21	2	5	4						
Black-headed Grosbeak		20	8	3	8	5	2	1	5	2									
Lazuli Bunting		2	4	2	2	2	8	8	5										
Chipping Sparrow	1	73	47	19	47	39	34	14	28	26	8	30	15	9	3	1	4	2	
Savannah Sparrow					1			1	1	4	2	9	5	10	6	3	3	7	9
Fox Sparrow							1	3	6	14	28	41	22	30	14	6	12	39	

Lincoln's Sparrow									3	2	2	6	1	5	3	1		1	
Golden-crowned Sparrow									1	19	49	162	152	182	198	205	192	290	36
Puget Sound White-crowned Sparrow						1	1	1	4	12	4	13	25	34	21	1	4	1	
Gambel's White-crowned Sparrow									3	14	23	47	36	24	28	39	35	28	
Bullock's Oriole				2	1	1													
Purple Finch												3	2	6	20	9	15	32	2
Lesser Goldfinch		11	17	7	12	24	24	16	16	10	5	6	6	12	3	2	3	4	
Lawrence's Goldfinch												2	8					2	
American Goldfinch											1			1		4	4	1	
Net hours	46	372	428	558	917	823	979	888	933	931	1050	986	1078	1066	968	1010	751	833	61
Trap hours	63	55	196	81	52	60	60	65	187	149	116	169	198	204	411	536	533	1702	1463

Table 6 Comparison of Numbers of Selected Spring and Fall Migrants Banded Fall 1970 to Spring 1972 on Mission Ridge and Spring 1968 (part) to Spring (part) 1976 on the South Farallon Islands (DeSante and Ainley 1980)

	Spring		Fall	
Species	Mission Ridge	Farallon Islands	Mission Ridge	Farallon Islands
Calliope Hummingbird	10	3	0	0
Rufous Hummingbird	168	32	0	0
Red-shafted Flicker	4	6	44	22
Willow Flycatcher	5	64	67	57
Western Flycatcher	122	106	579	224
Ruby-crowned Kinglet	26	164	231	188
Swainson's Thrush	721	89	129	114
Hermit Thrush	66	98	928	186
Northern Mockingbird	11	13	16	31
Warbling Vireo	143	45	67	124
Orange-crowned Warbler	335	440	52	101
Nashville Warbler	23	21	2	27
Yellow Warbler	94	116	54	357
Audubon's Warbler	59	268	84	192
Black-throated Gray Warbler	4	5	4	60
Townsend's Warbler	41	280	3	169
Hermit Warbler	8	13	0	56
MacGillivray's Warbler	65	33	9	77
Wilson's Warbler	409	1245	52	289
Western Tanager	15	70	51	91
Black-headed Grosbeak	64	38	54	24
Lazuli Bunting	10	16	33	71
Chipping Sparrow	94	45	400	355
Savannah Sparrow	27	7	61	518
Fox Sparrow	18	10	216	146
Lincoln's Sparrow	17	90	24	144
Golden-crowned Sparrow	223	81	1486	1207
Gambel's White-crowned Sparrow	67	106	277	496
Puget Sound White-crowned Sparrow	71	53	132	461
Bullock's Oriole	51	5	4	5
Purple Finch	161	23	89	142
Lesser Goldfinch	75	7	178	63
Lawrence's Goldfinch	0	1	12	3
American Goldfinch	50	8	11	2
Degree of correlation of numbers of spring and of fall migrants	Coefficient of correlation = +0.469712		Coefficient of correlation = +0.74201	
Probability of positive correlation	$P = 0.9880$		$P = 0.9997$	

Mockingbird, Warbling Vireo, Orange-crowned Warbler, Black-headed Grosbeak, Lazuli Bunting, Chipping Sparrow, and Lesser Goldfinch.

Species-by-species comparisons from Tables 4 and 5 with the accounts in DeSante and Ainley (1980) reveal close parallels in many species between passage periods and peaks of passage on Southeast Farallon Island and on Mission Ridge—except that at Mission Ridge we lack June-July records. Obvious examples of close agreement include peak migration periods for Hermit Thrushes in the last few days of April, compared to Swainson's Thrushes in the last few days of May, and Puget Sound White-crowned Sparrows in early April, compared to Gambel's White-crowned Sparrows in late April.

Patterns of numbers captured and banded of 34 of the more commonly captured species on Southeast Farallon Island and Mission Ridge (Table 6) are very well correlated. The actual numbers banded, treated as profiles, show better correlation for the fall period than for the spring period. Most species were captured in larger numbers in the fall migration than in spring in both places. However, a few species, including Orange-crowned, Townsend's, and Wilson's warblers, were more abundant in the spring on both Southeast Farallon and Mission Ridge.

SUMMARY

Mist nets and Potter traps were used to capture and band 14,159 land birds of 109 taxa on Mission Ridge, overlooking the south end of San Francisco Bay, on the western edge of the inner Coast Range of central California from August 1970 to May of 1972. Numbers of each species are tabulated by 5-day periods for March, April, May, August, September, and October and by months for January, February, November, and December. There were no operations during June and July. Definition of the timing of migratory passage varies from excellent to obscure as a function of such factors as type of residence and juvenile dispersal. Numbers of migrants and timing closely parellel similarly taken data from Southeast Farallon Island.

ACKNOWLEDGMENTS

We extend sincere thanks to the 55 people who participated in field work, most of them students enrolled in Biology 190, Field Studies in Biology, at San Jose State University. Their participation time and personal expense were far in excess of normal class requirements. Robert M. Stewart, then Land Bird Biologist at Point Reyes Bird Observatory, stimulated the initiation of the study. We thank William G. Bousman, Howard L. Cogswell, Alan M. Craig, David F. DeSante, Thomas W. Keeney, John S. Luther, C. John Ralph, and Ralph J. Raitt for their very helpful comments on the manuscript. We thank Michael Rigney for preparation of Figure 1. Personnel of the U.S. Bird Banding Laboratory, Laurel, Maryland, were most cooperative. We are very grateful to the E.O. Wool Ranch, Inc., and to Mr. Ernest O. Wool, Jr. in particular, for access to the ranch lands and useful ranch facilities.

LITERATURE CITED

Cortopassi, A. J., and Mewaldt, L. R. 1965. The circumannual distribution of White-crowned Sparrows. Bird-Banding 36:141-169.

DeBenedictis, P. 1967. The changing seasons. Am. Birds 21:4-6.

DeSante, D. F., and Ainley, D. G. 1980. The avifauna of the South Farallon Islands, California. Studies Avian Biol. 4.

DeSante, D. F., and Geupel, G. R. 1987. Landbird productivity in central coastal California: The relationship to annual rainfall and a reproductive failure in 1986. Condor 68:636-653.

DeWolfe, B. B., West, G.C., and Peyton, L. J. 1973. The spring migration of Gambel's Sparrows through southern Yukon Territory. Condor 75:43-59.

Farner, D. S. 1955. The annual stimulus for migration: Experimental and physiological aspects, in Recent Studies in Avian Biology. (A. Wolfson, ed.), pp. 198-237. Univ. Illinois Press, Urbana.

Grinnell, J., and Wythe, M. W. 1927. Directory to the bird-life of the San Francisco Bay Region. Pac. Coast Avifauna 15.

Johnson, N. K. 1965. Differential timing and routes of the spring migration in the Hammond Flycatcher. Condor 67:423-437.

Johnson, N. K. 1970. Fall migration and winter distribution of the Hammond Flycatcher. Bird-Banding 41:169-190.

Johnson, N. K. 1973. Spring migration of the Western Flycatcher with notes on seasonal changes in sex and age ratios. Bird-Banding 44:205-220.

Kaiser, S. 1976. Passerine migration through the inner coast range of central California. M. A. Thesis, San Jose State University.

King, J. R., Farner, D. S., and Mewaldt, L. R. 1965. Seasonal sex and age ratios in populations of the White-crowned Sparrows of the race *gambelii*. Condor 67:489-504.

King, J. R., and Mewaldt, L. R. 1981a. The average rate of travel by migrating White-crowned Sparrows, *Zonotrichia leucophrys gambelii*. N. Am. Bird Bander 6:98-100.

King, J. R., and Mewaldt, L. R. 1981b. Variation of body weight in Gambel's White-crowned Sparrows in winter and spring: Latitudinal and photoperiodic correlates. Auk 98:752-764.

Littlefield, C. D., and McLaury, E. L. 1973. Bird arrival dates on Malheur National Wildlife Refuge, Oregon. W. Birds 4:83-88.

Lowery, G. H., Jr., and Newman, R. J. 1966. A continent-wide view of bird migration on four nights in October. Auk 83:547-586.

McCaskie, G., DeBenedictis, P., Erickson, R., and Morlan, J. 1979. Birds of Northern California. Golden Gate Audubon Society, Berkeley.

Mewaldt, L. R., Morton, M. L., and Brown, I. L. 1964. Orientation of migratory restlessness in *Zonotrichia*. Condor 66:377-417.

Paxton, R. O. 1965. The changing seasons. Am. Birds 19:4-7.

Ralph, C. J. 1971. An age differential of migrants in coastal California. Condor 73:243-246.

Sibley, C. G. 1952. The birds of the South San Francisco Bay Region. Santa Clara Valley Audubon Society, San Jose, California.

Stewart, R. M. 1972. Fall migration of common passerines at Bolinas, California. Calif. Birds 3:9-12.

Stewart, R. M., Mewaldt, L. R., and Kaiser, S. 1974. Age ratios of coastal and inland fall migrant passerines in central California. Bird-Banding 45:46-57.

Verner, J., and Boss, A. S. 1980. California wildlife and their habitats: Western Sierra Nevada. Gen. Tech. Rep. PSW-37, U.S. Forest Service, Berkeley.

Weston, H. G., Jr. 1948. Spring arrival of summer residents in the Berkeley area, California. Condor 50:81-82.

Wolfson, A. 1945. The role of the pituitary, fat deposition, and body weight in bird migration. Condor 47:95-127.

Accepted 27 February 1988

APPENDIX

In shorter periods of operation in the spring of 1970, in late 1972, and in the years 1973 to 1979 another 2142 birds of 83 species were captured 2873 times in nets and traps (Table A). These included four species not captured during the main study: Killdeer, a resident (3), Say's Phoebe, a winter resident (1), Tennessee Warbler, a vagrant (1), and Canyon Wren, a resident (1).

Several resident passerines first encountered 1970-72 were still being recaptured as late as 1979. These included permanent residents as well as migratory summer and migratory winter residents. We received notice from the U.S. Bird Banding Laboratory of four recoveries:

1. Swainson's Thrush banded 4 May 1970, recovered 17 May 1973 at Salem, Oregon.
2. Starling banded 24 November 1971, recovered in July 1972 at Port Townsend, Washington.
3. Black-headed Grosbeak banded 22 September 1971, recovered 12 April 1974 at Taretan, Michoacan, Mexico.
4. Puget Sound White-crowned Sparrow banded 7 October 1970, recovered 25 April 1972 at Duncan, British Columbia.

Table A Birds Captured in Mist Nets and Potter Traps in the Spring of 1970 and from the Fall of 1972 to the Fall of 1979

Species	Jan	Feb	Mar	Apr	May	—	Sep	Oct	Nov	Dec	Total
Sharp-shinned Hawk			1					1			2
Cooper's Hawk								1			1
California Quail					1						1
Killdeer					3						3
Mourning Dove					4						4
Western Screech Owl					1						1
Anna's Hummingbird					3						3
Rufous Hummingbird				1	9						10
Allen's Hummingbird					1						1
Nuttall's Woodpecker					3						3
Hairy Woodpecker					1						1
Red-shafted Flicker					3						3
Olive-sided Flycatcher					1						1
Willow Flycatcher					5						5
Hammond's Flycatcher					4						4
Gray Flycatcher				1	10						11

Table A (Continued)

Species	Jan	Feb	Mar	Apr	May	—	Sep	Oct	Nov	Dec	Total
Western Flycatcher				4	64						68
Black Phoebe				1	1			1			3
Say's Phoebe								1			1
Ash-throated Flycatcher				1	6						7
Western Kingbird					3						3
Horned Lark	2		3		14				5	1	25
Steller's Jay				10	4						14
Scrub Jay		3	2	3	5						13
Yellow-billed Magpie			1		2		1	2			6
Chestnut-backed Chickadee							2				2
Plain Titmouse		8		10	18		6				42
Common Bushtit					1						1
Red-breasted Nuthatch					1						1
White-breasted Nuthatch				1	1						2
Brown Creeper					1						1
Canyon Wren					1						1
Bewick's Wren		1	1	1			1	1			5
House Wren				1	1						2
Ruby-crowned Kinglet		1			5		1				7
Western Bluebird					5		7	1			13
Swainson's Thrush					113						113
Hermit Thrush		2	3	8	36		3	23			75
American Robin				1	12						13
Wrentit					1						1
Northern Mockingbird					5						5
California Thrasher									1		1
Cedar Waxwing					2						2
Loggerhead Shrike					2		1				3
European Starling					2		1				3
Solitary Vireo					1						1
Warbling Vireo				1	11						12
Tennessee Warbler					1						1
Orange-crowned Warbler				8	38						46
Nashville Warbler				1	7						8
Yellow Warbler					7						7
Myrtle Warbler					1			2			3
Audubon's Warbler			1		2		1				4
Black-throated Gray Warbler					3						3
Townsend's Warbler					4						4
Hermit Warbler					2						2
MacGillivray's Warbler				1	19						20
Wilson's Warbler				5	53						58
Yellow-breasted Chat					3						3
Western Tanager					9						9
Black-headed Grosbeak				4	30						34
Rufous-sided Towhee		1	1	1	5		1				9
Brown Towhee	2	4	6	8	7		3	4	1		35
Rufous-crowned Sparrow							1				1
Chipping Sparrow				7	60			1			68
Lark Sparrow	5	2	9	3	29		27	1	3		79

Table A (Continued)

Species	Jan	Feb	Mar	Apr	May	—	Sep	Oct	Nov	Dec	Total
Savannah Sparrow			20		1		2	7	1		31
Fox Sparrow		4		1	5		2	2			14
Song Sparrow					1						1
Lincoln's Sparrow		1			6			1			8
Golden-crowned Sparrow	100	180	61	43	33		15	103	29	8	572
Puget Sound White-crowned Sparrow	2	6	2	15	2		4	10			41
Gambel's White-crowned Sparrow	1	29		10	7		6	12			65
Oregon Junco	1	56	57	20	9		5	42	17		207
Red-winged Blackbird		3			24		10				37
Western Meadowlark					7			1			8
Brewer's Blackbird		2	15	12	32		6				67
Bullock's Oriole				5	27						32
Purple Finch					1						1
House Finch				6	45		16	33			100
Lesser Goldfinch				5	29						34
Lawrence's Goldfinch				2	9						11
American Goldfinch				2	3						5
Total new captures	113	303	183	203	901		122	251	57	9	2142
Recaptures	28	83	161	183	220		2	44	8	2	731
Net hours	0	44	86	357	3997[a]		59	101	13	0	4657
Trap hours	132	90	239	261	33		19	106	91	12	983

[a] In May 1970 nets were run 3,847 net hours — from dawn to dusk.

Sage Sparrows

Sketch by Narca Moore-Craig

BREEDING ECOLOGY OF A WILLOW FLYCATCHER POPULATION IN GRAND CANYON, ARIZONA

BRYAN T. BROWN, National Park Service, P. O. Box 41058, Tucson, Arizona 85717
(present address: P. O. Box 3741, Tucson, Arizona 85722)

The Willow Flycatcher (*Empidonax traillii*) is a widely distributed, summer resident insectivore breeding across most of the United States and southern Canada (A.O.U. 1983). The subspecies of Willow Flycatcher occurring in the arid southwestern United States and extreme northwestern Mexico, *E. t. extimus* Phillips (1948), has decreased substantially in numbers in the past few decades (Hunter et al. 1987, Unitt 1987). This reduction is attributable primarily to a loss of riparian habitat and secondarily to brood parasitism by Brown-headed Cowbirds (*Molothrus ater*; Unitt 1987). In Arizona, the Willow Flycatcher is rare and restricted to riparian habitat, but bred formerly in dense willows (*Salix* spp.) and marshy areas at both low and high elevations throughout the state (Monson and Phillips 1981). The steepest decline in numbers of Willow Flycatchers in the Southwest has occurred in Arizona, where fewer than 50 pairs are known to remain (Unitt 1987). Unitt (1987) found this subspecies of Willow Flycatcher to be rarer than many species of birds legally designated as endangered, but that no study of its breeding biology existed.

This study documents the abundance, distribution, and breeding biology of a small Willow Flycatcher population along the Grand Canyon section of the Colorado River. This population is of special interest because it is the largest population known in Arizona (Unitt 1987) and is isolated by over 100 and 250 km, respectively, from the nearest known Willow Flycatcher populations at Havasu Creek and in the White Mountains of Arizona (Carothers and Johnson 1975, Unitt 1987). The entire population is located within Grand Canyon National Park, an ecological preserve.

STUDY AREA

The study area (Figure 1) was the 360-km riparian corridor of the Colorado River through Grand Canyon National Park, Arizona, from Lees Ferry (River Mile 0) downstream to Diamond Creek (River Mile 225). River Miles are place names from Stevens (1983). Glen Canyon Dam, 25 km upstream of Lees Ferry, has caused substantial changes in the study area since its completion in 1963 (Turner and Karpiscak 1980).

The riparian corridor consists of two distinct vegetative communities. The old high-water zone (OHWZ) includes those habitats above the pre-dam high-water line that persisted after completion of the dam as a relict community. The OHWZ is dominated by honey mesquite (*Prosopis glandulosa*) and catclaw acacia (*Acacia greggii*) and contains smaller amounts of netleaf hackberry (*Celtis reticulata*) and redbud (*Cercis occidentalis*). The new high-water zone (NHWZ) is a new riparian community that has developed since 1963 in the zone previously scoured by floods. The NHWZ is dominated by the exotic

tamarisk (*Tamarix chinensis*); associated native vegetation includes coyote willow (*Salix exigua*), Goodding willow (*S. gooddingii*), arrowweed (*Tessaria sericea*), seepwillow (*Baccharis* spp.), and reed (*Phragmites communis*).

METHODS

I surveyed the study area by boat for Willow Flycatchers in late May and June, 1982-1987, using song counts (Bull 1981) to census singing birds from 0800 to 1200 hours daily. Approximately 15-20 km of the study area were censused per day. The Colorado River for most of its length through the Grand Canyon is a swift, flatwater stream without the rapids and associated background noise that would interfere with song counts. This is especially true along those portions of the river supporting extensive riparian vegetation, where singing Willow Flycatchers could be detected easily on both sides of the river by an observer on a boat in midstream.

I considered birds resident if they sang repeatedly from an exposed perch in territorial fashion (Serena 1982). All songs were assumed to represent singing males, even though female Willow Flycatchers may also sing on the breeding grounds, at least in Canada (Seutin 1987). Song counts were supplemented by ground censuses and by intensive nest searches in areas where Willow Flycatchers occurred consistently from year to year: Saddle Canyon to Kwagunt Creek, and Cardenas Marsh. I spent approximately 4 days searching both areas each year.

Nests were located by systematic ground searches of both riparian zones by up to six skilled observers. I took the following data on each nest: height above ground; distance from nest to water; species, height, and diameter at breast height (dbh) of the plant supporting the nest; species of adjacent plants; date and time; nest contents; and presence or absence of brood parasitism by Brown-headed Cowbirds. I observed nests only once a season, for periods not exceeding 3 days each.

I measured habitat variables in 0.04-ha circular plots (radius 11.2 m) centered at nests (James and Shugart 1970, James 1971, Collins 1981). In each plot I measured maximum canopy height to the nearest 1 m, total number of trees (defined as woody vegetation >7.5 cm dbh), and perimeter of edge, defined as the border between a patch of vegetation and an open area (Martinka 1972). I identified and counted shrubs in two perpendicular arm-length transects (north-south, east-west) at breast height across the center of each plot. Shrubs included woody vegetation at least 1.5 m tall with a dbh of <7.5 cm. Shrub counts were also taken in similar plots located a random distance (20-35 m) and direction away from nest plots for comparison of shrub species composition between nest sites and adjacent habitat.

The length of one breeding cycle is 28.5 days: 4 days to lay an average clutch of four eggs (Bent 1963, Walkinshaw 1966), 12 days average incubation time (King 1955), and 12.5 days average nestling time (King 1955). I assumed that clutches containing less than the average number of eggs were incomplete. I assumed nests to be at the mid-point of incubation (the point at which the probability of error in determining egg age was lowest) if they contained a full clutch.

HISTORICAL BACKGROUND

Because the study area is difficult to reach, the status, abundance, and distribution of Willow Flycatchers there prior to the construction of Glen Canyon Dam is poorly known. The first bird checklist for Grand Canyon National Park listed Willow Flycatcher as a rare migrant, with no known breeding record (Grater 1937). Woodbury and Russell (1945) reported two records from the

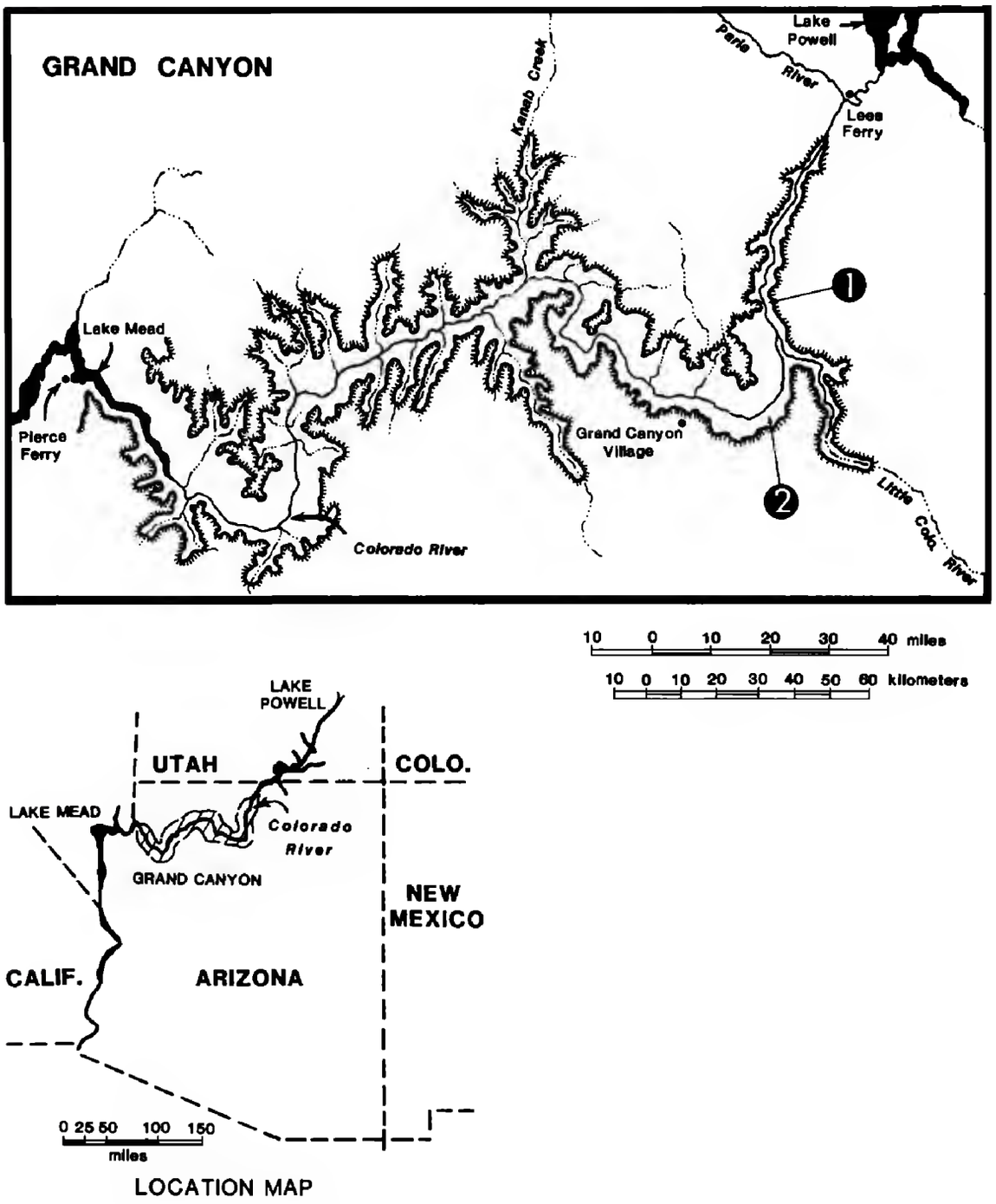


Figure 1. Distribution of Willow Flycatchers along the Colorado River in Grand Canyon, Arizona, 1982-1987. Circled numbers represent the two areas where Willow Flycatchers occur: 1, Saddle Canyon to Kwagunt Creek; 2, Cardenas Marsh.

river: a summer resident female collected 2 miles downriver of Lees Ferry on 7 June 1933 and an abandoned Willow Flycatcher nest collected from a "tamarisk among willows" near Lees Ferry on 18 August 1936. The nest contained one rotten cowbird egg. The first ornithologist to traverse the Grand Canyon by boat was Robert W. Dickerman (Monson 1953), who collected two Willow Flycatchers, one each at Lees Ferry and at the mouth of the Little Colorado River, 16-17 June 1953. Behle and Higgins (1959) identified the Willow Flycatcher as a common summer resident in riparian vegetation along the river immediately upstream of Lees Ferry. This area was later inundated by Glen Canyon Dam.

Completion of the dam and subsequent changes in downstream riparian habitats ensured that the original abundance and distribution of Willow Flycatchers in the study area would never be known. Systematic surveys of riparian birds in the Grand Canyon began in the 1970s, when Carothers and Sharber (1976) reported that the Willow Flycatcher was a rare summer resident, with only one known breeding pair, at Cardenas Marsh. One of this pair was incubating eggs on 12 July 1971 (Carothers and Johnson 1975). Carothers and Johnson also thought that small breeding populations of Willow Flycatchers occurred (at least formerly) on tributary streams such as Havasu and Deer creeks, but were not able to document their occurrence.

RESULTS AND DISCUSSION

Distribution

Breeding Willow Flycatchers occur in two distinct sections of the study area (Figure 1). The upstream section extends 15 km from Saddle Canyon (River Mile 47; elevation 860 m) downstream to Kwagunt Creek (River Mile 56; elevation 840 m). This section supports the largest (ca. 100-150 ha) and best-developed tract of riparian habitat between Lees Ferry and Phantom Ranch (River Mile 89), a distance of 150 km by river. The lower section, at the mouth of Cardenas Creek (River Mile 71; elevation 800 m), is Cardenas Marsh, a small (2 ha), isolated marsh surrounded by well-developed riparian vegetation. Willow Flycatchers were not heard or seen at any other localities during the 6-year study period.

Population Density

The number of singing Willow Flycatchers detected in the study area increased from 2 in 1982 to 11 in 1986, then declined to 7 in 1987 (Table 1). The 1986 count was a tenfold increase over the single pair detected during similar censuses (1974-1976) by Carothers and Sharber (1976). The most substantial increase during my study was in the section between Saddle Canyon and Nankoweap Creek, where the annual number of singing birds consistently increased from one to eight from 1982 to 1986 (Table 1).

For several reasons, I believe that the singing Willow Flycatchers encountered during the study were summer residents. Singing birds were counted only if they were observed to sing repeatedly from an exposed perch in territorial fashion (Serena 1982). Over the 6-year study period, at least one-third of all singing birds detected had active nests in their territories (Table 1). Finally,

Table 1 Populations of Willow Flycatchers along the Colorado River in the Grand Canyon, 1982-1987, as Indicated by Song Counts and Discovery of Active Nests[a]

	No. singing males/year					
Location	1982	1983	1984	1985	1986	1987
Section 1						
Saddle Canyon to Nankoweap Cr.	1	4	3	7	8	4
Nankoweap Cr. to Kwagunt Cr.	0	0	0	0	1	0
Section 2						
Cardenas Marsh	1	0	1	1	2	3
Annual totals	2	4	4	8	11	7
No. active nests found/year	2	0	2	4	2	2

[a] Annual numbers of active nests found represent those nests discovered during nest searches, not the total number of nests present. Extremely high water levels in 1983 flooded all Willow Flycatcher habitat to a depth of ca. 2 m and curtailed nest searches.

the majority of males detected each year were within 100 m of locations where singing Willow Flycatchers had been observed in the previous year or years.

Nevertheless, the possibility exists that some of the singing male Willow Flycatchers censused during the study period were migrants. Phillips et al. (1964) noted that although the summer resident (i.e., *E. t. extimus*) population of Willow Flycatchers is the first to arrive and begins breeding in Arizona in May, *E. t. brewsteri* occurs (at least in southern Arizona) as a migrant until mid-June. Serena (1982) also reported that migrant Willow Flycatchers may sing and exhibit characteristically territorial activity such as chasing.

Seutin's (1987) finding that both male and female Willow Flycatchers sing, at least in Canada, raises questions about the accuracy of surveys based on song. If female Willow Flycatchers are found to sing in the Southwest, future research on song frequency of females might enable the calculation of a correction factor to reduce this potential source of error.

Nest Placement

Twelve active Willow Flycatcher nests were found during the study period (Table 1), but habitat and nest-site measurements were taken at only eight. Nest heights above ground ranged from 1.5 to 4.5 m (median = 3.3 m; N = 12). Distances of nests from the river ranged from 0 to 75 m (median = 7 m; N = 12); one nest was built over water. Ten of 12 nests were located within 15 m of the river. The maximum distance from any nest to the river could have not exceeded 100 m, the maximum width of the riparian zone at nest sites. Distances from nests to the nearest vegetation edge ranged from 0 to 11 m (median = 6.5 m; N = 8).

All twelve nests were in tamarisk, the dominant woody plant of the river corridor. Height of tamarisk shrubs in which nests were placed ranged from 4 to 7 m (median = 6m; N = 8); dbh of those plants ranged from 3 to 9 cm (median = 6 cm; N = 8). Tamarisk was also the woody plant most often adjacent to the plant in which the nest was located (frequency = 0.81), fol-

lowed by coyote willow (frequency = 0.16) and seepwillow (frequency = 0.03).

Breeding Habitat

All Willow Flycatcher nests were located in the tamarisk-dominated NHWZ community. Likewise, all singing birds and all identified Willow Flycatcher territories were located in the NHWZ. Habitat characteristics at nest sites varied considerably (Table 2). The habitat around nest sites was dense stands of tamarisk and coyote willow shrubs with a median canopy height of 7 m and few trees (Table 2). Tamarisk was the most abundant woody plant, dominating the habitat around 75% of the nest sites; coyote willow was dominant at 25% of the nests. The median frequency of tamarisk shrubs composing the habitat around nest sites (0.85) was significantly greater than the median frequency of tamarisk shrubs in adjacent habitat (0.37) (two-tailed Wilcoxon signed rank test, $P = 0.034$). These stands are primarily even-aged, structurally homogeneous stands of tamarisk or mixed tamarisk-willow at the river's edge. Extensive areas of apparently suitable habitat exist along the river between Saddle Canyon and Kwagunt Creek but are unoccupied by Willow Flycatchers.

Nesting Chronology

Willow Flycatcher nests under construction or containing eggs were discovered between 30 May and 15 June. From the data gathered at these nests, I calculated the length of the breeding season (period when eggs or young are in the nest) to extend from 2 June to 10 July. Nest construction for most pairs was underway by 27-30 May. However, the breeding season extends through late July in Nebraska (Holcomb 1972), Ohio (Holcomb 1974), Washington (King 1955), and southern California (Unitt 1987). Data from this study may have failed to identify nests from the latter half of the breeding season because of the lack of field work in late June and July. Carothers and Johnson (1975) reported finding an active Willow Flycatcher nest with eggs being incubated on 12 July 1971 in my study area, indicating that the breeding season there may extend through 1 August.

Table 2 Characteristics of Willow Flycatcher Breeding Habitat at 0.04-ha Circles Centered at Nest Sites[a] along the Colorado River in the Grand Canyon, 1982-1986

Variable	Minimum	25% Quartile	Median	75% Quartile	Maximum
Max. canopy height (m)	6	6	7	8	9
Trees/0.04 ha	0	1	3	5	37
Total shrubs/0.04 ha	180	318	338	843	2105
Tamarisk shrubs/0.04 ha	95	160	280	580	745
Willow shrubs/0.04 ha	25	33	55	150	580
Edge perimeter/0.04 ha (m)	1	10	17	24	45

[a] $N = 8$ in all cases.

Brood Parasitism by Brown-headed Cowbirds

Eight of the 12 Willow Flycatcher nests discovered were examined for brood parasitism by Brown-headed Cowbirds. Four (50%) of the eight nests contained cowbird eggs. Three of the four nests contained one cowbird egg; the remaining nest contained two cowbird eggs.

Willow Flyctchers responded to cowbird parasitism in several ways. At least two nests were abandoned after a cowbird egg was laid in them. One pair apparently removed cowbird eggs from a parasitized nest, as indicated by fresh cowbird eggshells found directly beneath the nest. Finally, another pair responded to parasitism by layering over a cowbird egg (and a flycatcher egg) with fresh nesting material and laying a new clutch in the modified nest. The subsequent clutch was also parasitized.

Serena (1982) and Unitt (1987) suggested that high rates of brood parasitism by cowbirds contributed to Willow Flycatcher declines or local extirpations in California. Low cowbird parasitism rates have been reported from Michigan (5%; Walkinshaw 1966) and Nebraska (8%; Holcomb 1972). The Willow Flycatcher population in my study area increased from 1982 to 1986 despite a 50% cowbird parasitism rate. Nevertheless, cowbird parasitism may be partially responsible for the absence of Willow Flycatchers in large tracts of apparently suitable habitat along the Colorado River.

Management Implications

Tamarisk is a valuable nesting resource for Willow Flycatchers along the Colorado River in Grand Canyon, and management actions to control, reduce, or eliminate tamarisk from this locale should be considered carefully. However, Willow Flycatchers do not use tamarisk for nesting elsewhere in the remainder of their historic range in Arizona (W. C. Hunter pers. comm.). Tamarisk is used for nesting in some mid-elevation riparian areas along the Rio Grande in New Mexico (Hundertmark 1978). Further research on tamarisk use by nesting Willow Flycatchers is needed to determine if elevational or geographic trends exist.

The extent of riparian vegetation in which Willow Flycatchers nest was reuced by 35-40% from 1980 to 1985 by streambank erosion caused by large water releases from Glen Canyon Dam (Pucherelli 1987). Continued erosion could reduce the amount of available habitat further. Water releases from Glen Canyon Dam should be managed in such a way as to minimize streambank erosion and the potential loss of Willow Flycatcher breeding habitat. The Willow Flycatcher population in the Grand Canyon section of the Colorado River should be monitored annually to assess its size and the long-term effects of cowbird parasitism and habitat change.

SUMMARY

I studied the breeding ecology of a small Willow Flycatcher population along the Grand Canyon section of the Colorado River, Arizona, in May and June, 1982 to 1987. The population increased from 2 singing birds in 1982 to 11 in 1986 but declined to 7 in 1987. All nests (N = 12) discovered were located in tamarisk. Breeding habitat was dense stands of tamarisk and coyote willow

shrubs within 15 m of the river with a median canopy height of 7 m and few trees. The frequency of tamarisk constituting nest-site habitat was significantly greater than the frequency of tamarisk in adjacent riparian habitat. The known breeding season extended from 2 June to 10 July but may extend to 1 August. Four of eight nests were parasitized by Brown-headed Cowbirds. I recommend continued monitoring of the Willow Flycatcher population and the release of water from Glen Canyon Dam in such a way as to minimize streambank erosion and subsequent loss of breeding habitat.

ACKNOWLEDGMENTS

I thank Susan C. Jones, Kenneth J. Kingsley, and Marie McGee for their assistance during field work. Special thanks to Dugald Bremner, Brian Dierker, Helen Kalevas, Lauren Lucas, Tom Moody, and Mike Yard of Humphrey Summit Associates, Flagstaff, for logistical support. Michael W. Trosset provided statistical advice. I thank Martha Hahn and John Thomas of the National Park Service and David L. Wegner of the Bureau of Reclamation for their encouragement and support throughout this study. John P. Hubbard, William C. Hunter, Gale Monson, and Philip Unitt commented on an early draft of this manuscript. This work is part of the Glen Canyon Environmental Studies program funded by the Bureau of Reclamation and the National Park Service.

LITERATURE CITED

American Ornithologists' Union. 1983. Check-list of North American Birds. 6th ed. American Ornithologists' Union, Lawrence, KS.

Bent, A. C. 1963. Life Histories of North American Flycatchers, Larks, Swallows, and Their Allies. Dover, New York.

Behle, W. H., and Higgins, H. G. 1959. The birds of Glen Canyon, in Ecological Studies of Flora and Fauna in Glen Canyon (A. M. Woodbury, ed.), pp. 107-133. Univ. Utah Anthropol. Pap. 40 (Glen Canyon Series No. 7).

Bull, E. L. 1981. Indirect estimates of abundance of birds. Studies Avian Biol. 6:76-80.

Carothers, S. W., and Johnson, R. R. 1975. Recent observations on the status and distribution of some birds of the Grand Canyon region. Plateau 47:140-153.

Carothers, S. W., and Sharber, N. J. 1976. Birds of the Colorado River, in An Ecological Survey of the Riparian Zone of the Colorado River between Lees Ferry and Grand Wash Cliffs (S. W. Carothers and S. W. Aitchison, eds.), pp. 109-122. Colorado River Tech. Rep. 10, Grand Canyon National Park, Grand Canyon, AZ.

Collins, S. L. 1981. A comparison of nest-site and perch-site vegetative structure for seven species of warblers. Wilson Bull. 93:542-547.

Grater, R. K. 1937. Check-list of Birds of Grand Canyon National Park. Nat. Hist. Bull. 8, Grand Canyon Nat. Hist. Assoc., Grand Canyon, AZ.

Holcomb, L. C. 1972. Traill's Flycatcher breeding biology. Nebr. Bird Rev. 40:50-68.

Holcomb, L. C. 1974. The influence of nest building and egg laying behavior on clutch size in renests of the Willow Flycatcher. Bird-Banding 45:320-325.

Hundertmark, C. A. 1978. Breeding birds of Elephant Butte Marsh. N. M. Ornithol. Soc. Publ. 5.

Hunter, W. C., Ohmart, R. D., and Anderson, B. W. 1987. Status of breeding riparian-obligate birds in southwestern riverine systems. W. Birds 18:10-18.

James, F. 1971. Ordination of habitat relationships among breeding birds. Wilson Bull. 47:215-236.

James, F., and Shugart, H. 1970. A quantitative method of habitat description. Aud. Field Notes 24:727-736.

King, J. R. 1955. Notes on the life history of Traill's Flycatcher (*Empidonax traillii*) in southeastern Washington. Auk 72:148-173.

Martinka, R. R. 1972. Structural characteristics of Blue Grouse territories in southwestern Montana. J. Wildlife Mgt. 36:498-510.

Monson, G. 1953. The spring migration. Southwest region. Aud. Field Notes 7:320-322.

Monson, G., and Phillips, A. R. 1981. Annotated Checklist of the Birds of Arizona. Univ. Ariz. Press, Tucson.

Phillips, A. R. 1948. Geographic variation in *Empidonax traillii*. Auk 65:507-514.

Phillips, A. R., Marshall, J., and Monson, G. 1964. The Birds of Arizona. Univ. Ariz. Press, Tucson.

Pucherelli, M. J. 1987. Evaluation of riparian vegetation trends in the Grand Canyon using remote sensing techniques. Unpublished Glen Canyon Environmental Studies report to U. S. Bureau of Reclamation, Upper Colorado Region, P. O. Box 11568, Salt Lake City, Utah 84147.

Serena, M. 1982. The status and distribution of the Willow Flycatcher (*Empidonax traillii*) in selected portions of the Sierra Nevada, 1982. Wildlife Mgt. Admin. Rep. 82-5, Calif. Dept. Fish and Game, Sacramento.

Seutin, G. 1987. Female song in Willow Flycatchers (*Empidonax traillii*). Auk 104:329-330.

Stevens, L. E. 1983. The Colorado River in Grand Canyon: A Comprehensive Guide. Red Lake Books, Flagstaff, AZ.

Turner, R. M., and Karpiscak, M. M. 1980. Recent vegetation changes along the Colorado River between Glen Canyon Dam and Lake Mead, Arizona. U.S. Geol. Surv. Professional Pap. 1132.

Unitt, P. 1987. *Empidonax traillii extimus*: An endangered subspecies. W. Birds 18:137-162.

Walkinshaw, L. H. 1966. Summer biology of the Traill's Flycatcher. Wilson Bull. 78:31-46.

Woodbury, A. M., and Russell, H. N. 1945. Birds of the Navajo country. Bull. Univ. Utah 35:1-157.

Accepted 18 December 1987

Willow Flycatcher *Sketch by Brian Evans*

Use of skin for drawing courtesy of Museum of Southwestern Biology (Albuquerque, New Mexico)

NOTES

A SEMIPALMATED PLOVER NEST IN OREGON

GARY L. IVEY, Malheur National Wildlife Refuge, HC 72-Box 245, Princeton, Oregon 97721

KENT A. FOTHERGILL, 2345 Hawkins Lane, Eugene, Oregon 97405

KARLYN L. YATES-MILLS, P.O. Box 281, Burns, Oregon 97720

The known breeding range of the Semipalmated Plover (*Charadrius semipalmatus*) encompasses coastal Canada and Alaska (including the islands of arctic Canada, Newfoundland, Nova Scotia, and southwestern British Columbia), and the interior of central Canada (American Ornithologists' Union, 1983. Check-list of North American Birds, Am. Ornithol. Union, Lawrence, KS). J. R. Morris (W. Birds 5:22, 1974) reported the first Washington State record after he discovered two pairs of nesting Semipalmated Plovers at Ocean Shores on the central Washington coast in 1973. Semipalmated Plovers have been observed during the breeding season in 1984, 1985, and 1986 at the same Ocean Shores location (E. Cummins pers. comm.). Here, we report the first nesting record of this species from Oregon and from the interior of the Pacific Northwest.

On 23 June 1987, while A. Shono and Ivey were conducting a Snowy Plover (*Charadrius alexandrinus*) count on Stinking Lake (Malheur National Wildlife Refuge, ca. 40 km southwest of Burns, Harney County, Oregon), they observed a pair of

Figure 1. Semipalmated Plover chick at Stinking Lake, Harney County, Oregon, 8 July 1987.

Photo by K. Yates-Mills

Semipalmated Plovers behaving as if defending a territory. Ivey, Fothergill, and Yates-Mills returned to the area on 8 July to search for evidence that the pair might be nesting. We located one of the pair ca. 50 m west of the original sighting and observed it performing distraction behavior. After searching the area for a nest, we walked farther west along the shoreline and were surprised to find the other adult with a young chick. Both adults performed distraction displays while Ivey caught the chick for a photo (Figure 1).

We estimated the chick to be two days old when captured. It was much darker than Snowy Plover nestlings and showed the characteristic partially webbed toes and mask-like eye line shown by C. Harrison (1978. A Field Guide to the Nests, Eggs, and Nestlings of North American Birds. Collins, Cleveland). It also showed an incomplete breast band, which was not indicated by Harrison (1978), and it lacked the white forehead and elongated tail shown for the nestling Killdeer (*Charadrius vociferus*).

Ivey returned to the area again on 16 July with C. D. Littlefield and found the chick in the same area with one parent, captured it again, and banded it. The chick had begun to grow its juvenal plumage, showing a distinct gray-brown breast band; however, its upper feathers were dark gray with buff tips and its primaries were not quite fully developed.

Stinking Lake is a spring-fed internally drained alkaline lake covering ca. 300 ha and surrounded by sand dunes and volcanic rimrocks. Flat barren shorelines of sand and gravel on the east side of the lake provide excellent habitat for feeding and nesting shorebirds. Although we did not locate the actual nest site, the area where the Semipalmated Plover pair and chick were observed was an extensive alkaline flat covered by mats of dried algae, surrounding a narrow peninsula of sand and fine gravel with a few scattered greasewood (*Sarcobatus vermiculatus*) shrubs. W. N. Copeland and S. E. Greene (1982, Stinking Lake Research Natural Area. Suppl. 12 to J. F. Franklin, F. C. Hall, C. T. Dyrness, and C. Maser (eds). 1972 Federal Research Natural Areas in Oregon and Washington: A guide for scientists and educators. Pac. Northwest Forest and Range Exp. Stn. Portland, OR) provide a detailed description of Stinking Lake and its flora and fauna.

We thank C. D. Littlefield and D. R. Paulson for reviewing this manuscript and JoAnne Vawter for typing assistance.

Accepted 1 April 1988

STATUS OF GREAT BLUE HERON COLONIES IN KING COUNTY, WASHINGTON

MARTY MURPHY, Box 3070, Half Moon Bay, California 94019

The Great Blue Heron (*Ardea herodias*) has been common in western Washington throughout recorded history (Jewett et al. 1953). Shipe and Scott (1981) surveyed Great Blue Heron colonies in King County for the Washington Department of Wildlife. In 1983 the Department resurveyed three of the colonies noted by Shipe and Scott. In this paper I update information on Great Blue Heron colonies in this area.

Since 1981, four of the six colonies reported by Shipe and Scott have been abandoned, but six new ones have been reported and confirmed (Table 1). Most heron colonies in King County are now threatened by proposed commercial developments. The Great Blue Heron is considered a species with special concerns on the national level (Tate and Tate 1982), and the state of Washington has designated the Great Blue Heron a species of special concern and has established guidelines for management of colonies.

Many of the herons' feeding grounds are threatened also. The largest lakes in King County are Lake Washington and Lake Sammamish. Around the former only six wetlands remain, and some of these are threatened by development. The two wetlands on Lake Sammamish are both within parks. According to the Puget Sound Water Quality Authority (1987), approximately 14,000 acres of wetland around Puget Sound have been converted to other uses by diking and filling. Fifty percent of the wetlands along streams have been converted to pastures. Along the floodplains of six major rivers more than 150,000 acres have yielded to flood control diking, agriculture, and other development.

Known since 1955, the Black Diamond colony suffered from shooting up to 1981. Since then the surrounding area has been developed extensively. I saw no herons during my two visits to the site in 1986 and 1987.

The eight-nest Black River rookery in Renton is on an island within ponds created by the Soil Conservation Service for flood control. Developers proposed an office park for the site but failed to note the presence of the colony in their proposal. On 18 February 1987, at a time of pre-nesting and territorial activity of the herons, they cut a riparian forest just north of the colony in an area designated by the city of Renton as a conservancy zone. The U. S. Fish and Wildlife Service, Washington Department of Ecology, and Washington Department of Wildlife ordered the work stopped until a hearing examiner could review the project's effects on the herons and other wildlife. The herons returned to the area on 20 February, occupied seven nests, and fledged an average of two young per nest between 10 and 20 June, later than at the Sammamish and Yarrow Bay colonies.

I could not locate the Crystal Lake colony in May and June 1986 and presume it to be abandoned. On 11 June a highway was being cut through the forest and a housing development was in progress.

Park biologists discovered two heron nests in Discovery Park, Seattle, in 1986. This colony may grow because it is well protected within the park and trees are abundant. Perhaps herons from the recently abandoned Pigeon Point rookery about 2 km southwest will attempt to nest here.

Although development surrounds the Dumas Bay colony on three sides, the colony lies partly within Dumas Bay County Park, within which it is protected by fencing. The dense undergrowth beneath the colony and the vigilance of local residents also protect it.

The colony discovered in 1984 at Jensen's Cove, Lake Sammamish State Park, is still growing but faces problems. A public boat launch lies within 100 m of the rookery, and use of the launch has tripled since 1985. Water skiing and fast boats create waves that erode the shoreline and steepen the banks on which fledgling herons forage. In

Table 1 Great Blue Heron Colonies, King County, Washington

Location	Times site visited during this study	Number of nests						Supporting trees
		1981[a]	1983[b]	1984	1985	1986	1987	
Black Diamond, Grass Lake	2 (1986)	8	—	—	—	0	0	Red Alder (*Alnus rubra*)
Black River, Renton	27 (1986-87)	—	—	—	—	8	8[c]	Black Cottonwood (*Populus trichocarpa*)
Crystal Lake, Woodinville	2 (1986)	22	0	—	—	0	—	Douglas Fir (*Pseudotsuga menziesii*)
Discovery Park, Seattle	1 (1987)	—	—	—	—	2	2	Douglas Fir
Dumas Bay, Federal Way	3 (1986-87)	24	30	46[d]	—	29	29	Red Alder
Lake Sammamish State Park, Issaquah	19 (1984-87)	—	—	7	14	21	29	Black Cottonwood
Maury Island	—	—	0	—	—	—	—	Unknown
Peasley Canyon, Auburn	3 (1986-87)	15	10	14[d]	—	11	11	Red Alder
Phantom Lake, Bellevue	4 (1986-87)	—	—	—	5	3	0	Douglas Fir
Pigeon Point, Seattle	1 (1986)	—	—	16[d]	—	16	0	Black Cottonwood
Seahurst County Park, Burien	1 (1986)	4	—	—	—	0	—	Black Cottonwood
Weowna County Park, Bellevue	2 (1986)	4	—	—	—	0	—	Douglas Fir
Yarrow Bay, Kirkland	17 (1986-87)	—	—	—	2[e]	6	6	Black Cottonwood

[a] Data from Shipe and Scott (1981).
[b] Data from aerial survey conducted by Washington Department of Wildlife.
[c] Only seven nests actually occupied.
[d] Data from National Oceanic and Atmospheric Administration.
[e] Data from Harold Ritland (pers. comm.)

nearby Issaquah approximately 405 ha of wetlands and open fields are now shopping centers and freeway. Destruction of riparian growth along Issaquah Creek, within 10 m of the colony, restricts foraging habitat near the colony to the state park.

I made no attempt to observe the colony at Maury Island, accessible only by boat. The island was logged extensively in 1981, and no nests were observed there during the aerial survey of 1983.

The Peasley Canyon colony lies on a ridge, owned partly by a developer, above a receding marsh at the junctions of state highways 18 and 167. A shopping center that would cover a portion of the fields and wetlands adjacent to the colony has been proposed.

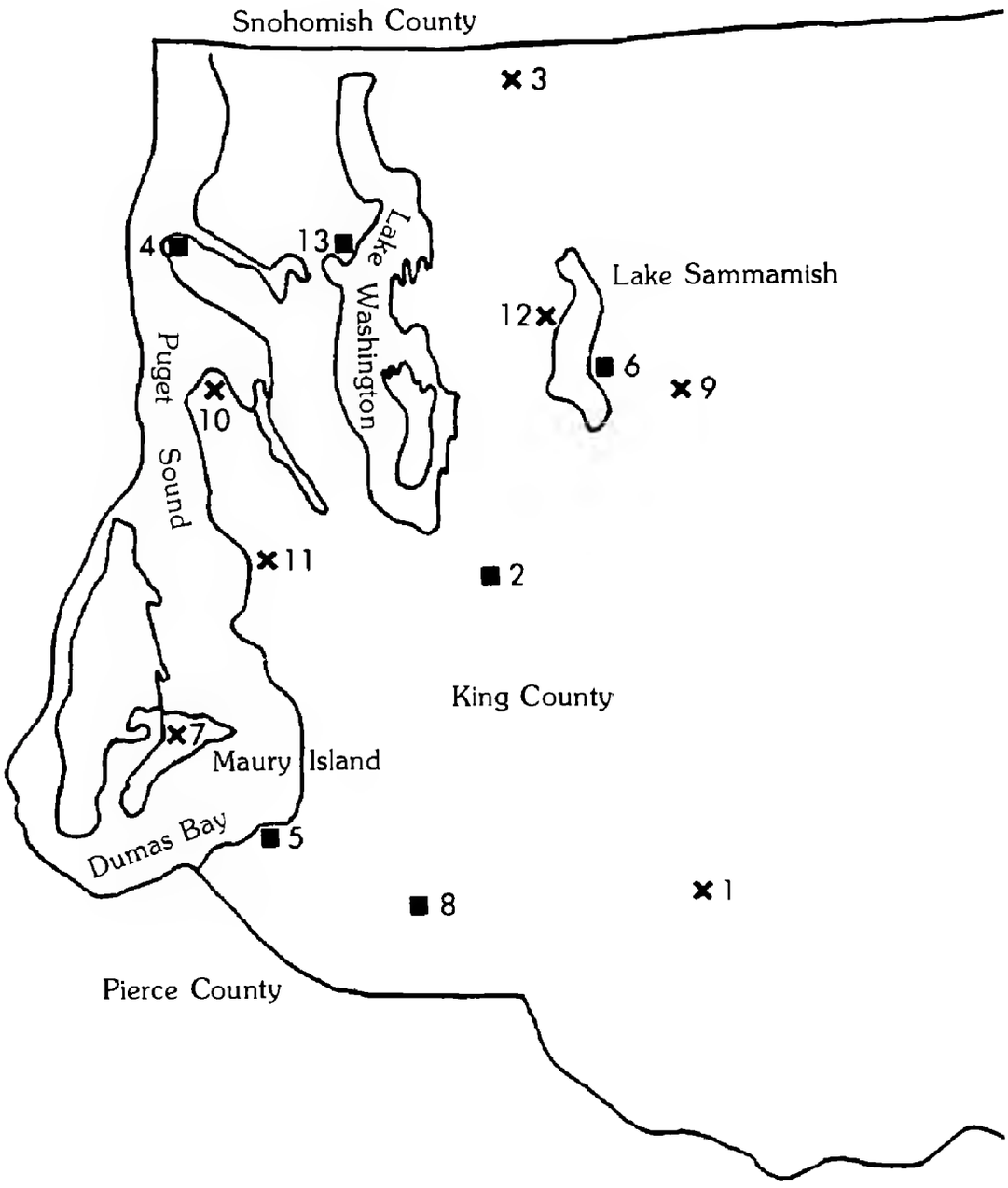


Figure 1. Locations of Great Blue Heron colonies in King County, Washington. 1, Black Diamond; 2, Black River; 3, Crystal Lake; 4, Discovery Park; 5, Dumas Bay County Park; 6, Lake Sammamish County Park; 7, Maury Island; 8, Peasley Canyon; 9, Phantom Lake; 10, Pigeon Point; 11, Seahurst County Park; 12, Weowna County Park; 13, Yarrow Bay. Squares, active colonies; crosses, abandoned colonies.

At Phantom Lake, herons originally nested near a boat-launching area, according to long-time lake residents. In 1985 they moved to an approximately 2-ha stand of Douglas fir, where they nested again in 1986. Cutting of cattails in the herons' feeding area, harassment by crows, and high winds are probable causes of abandonment in 1987.

Located high on a bluff above the industrialized Duwamish Waterway, the Pigeon Point colony encompassed 16 nests in 1986 but was deserted in 1987 (Stephen Penland pers. comm.), possibly as a result of bulldozing too near the colony or frequent blasting for a tunnel within 1 km of it. Seventy-six residences and improved access roads are being built within 100 m of the rookery, in contravention of the Washington Department of Wildlife's recommendation of a minimum buffer of 200 m between development and heron colonies.

I saw no evidence of a heron colony when I investigated the site at Seahurst County Park on 1 March 1986. Bluffs once well vegetated with Douglas firs and cottonwoods were bare, and new homes had been placed nearby. The parking lot has been enlarged since 1981, increasing human use of the beach.

I noted no heron nests at Weowna County Park in May 1986. A large new housing development had been placed at the southeastern border of the park. In 1987 cutting of trails through the park resulted in the loss of many trees, further diminishing the possibility of the herons' return. Since this colony is only about 1 km from the Lake Sammamish colony the herons at Weowna County Park may have moved to Lake Sammamish.

The Yarrow Bay rookery consists of six nests in a single Black Cottonwood in an approximately 25-ha wetland owned by the city of Kirkland. A condominium lies only 50 m east of the colony.

In King County Great Blue Herons fledge between 15 and 30 June. All appear to winter locally, though they disperse from the colonies between late August and October. Some may go to Padilla Bay, Skagit County, where I counted 270 at low tide on 16 August 1986. Some of these undoubtedly came from the two large colonies in Skagit County, on the Swinomish Channel, south of March Point and east of Anacortes (80 nests in 1987), and on Samish Island, northeast of Anacortes (340 nests in 1987, Toby Michelena pers. comm.).

Clearly, further monitoring of Great Blue Heron colonies in Washington state is in order. At present, species of "special concern" receive a minimum of attention during the process of environmental impact review. Extirpation of the heron from King County becomes more probable with continued rapid development not only of King County but of the entire Puget Sound region.

I thank Stephen Penland, Kelly McAllister, Bob Zeigler, and Susan Tank, Washington Department of Wildlife, and Jim Likes, U.S. Fish and Wildlife Service, for their encouragement and advice, Greg Butcher, Jim Lowe, and Helen Pratt for sharing their data, my husband Tom Murphy for his interest and assistance, and Dennis Paulson and Philip Unitt for their help with the manuscript.

LITERATURE CITED

Jewett, S.G., Taylor, W. P., Shaw, W. T., and Aldrich, J. W. 1953. Birds of Washington State. Univ. Wash. Press, Seattle.

Puget Sound Water Quality Authority. 1986. Habitat and wetlands protection. Issue paper. Puget Sound Water Quality Authority, Seattle.

Shipe, S.J., and Scott, W. W. 1981. Great Blue Heron in King County, Washington. Washington Game Department Non-game Program, Olympia.

Tate, J., Jr., and Tate, D. J. 1981. The Blue List for 1982. Am. Birds 36:126-135.

Accepted 5 March 1988

NORTHERN WATERTHRUSH SUMMER RANGE IN OREGON

ALAN CONTRERAS, Bureau of Governmental Research & Service, P.O. Box 3177, University of Oregon, Eugene, Oregon 97403

Northern Waterthrushes *(Seiurus noveboracensis)* have summered and presumably bred in the central Cascade Range of Oregon since 1977. During the 10 years since the first location was discovered, the species has been found in several nearby areas (Figure 1). This note discusses the current status of this Cascade population.

The Northern Waterthrush is steadily expanding its range and increasing its numbers in southern British Columbia (Wayne Weber pers. comm.), and it breeds in northeastern Washington (Mattocks, P. W., Hunn, E. S., and Wahl, T. R. 1976. A checklist of the birds of Washington State, with recent changes annotated. W. Birds 7:1-24). Weber found at least seven singing birds along the Okanagan River and tributaries near Tonasket in north-central Washington in 1987. The Northern Water-

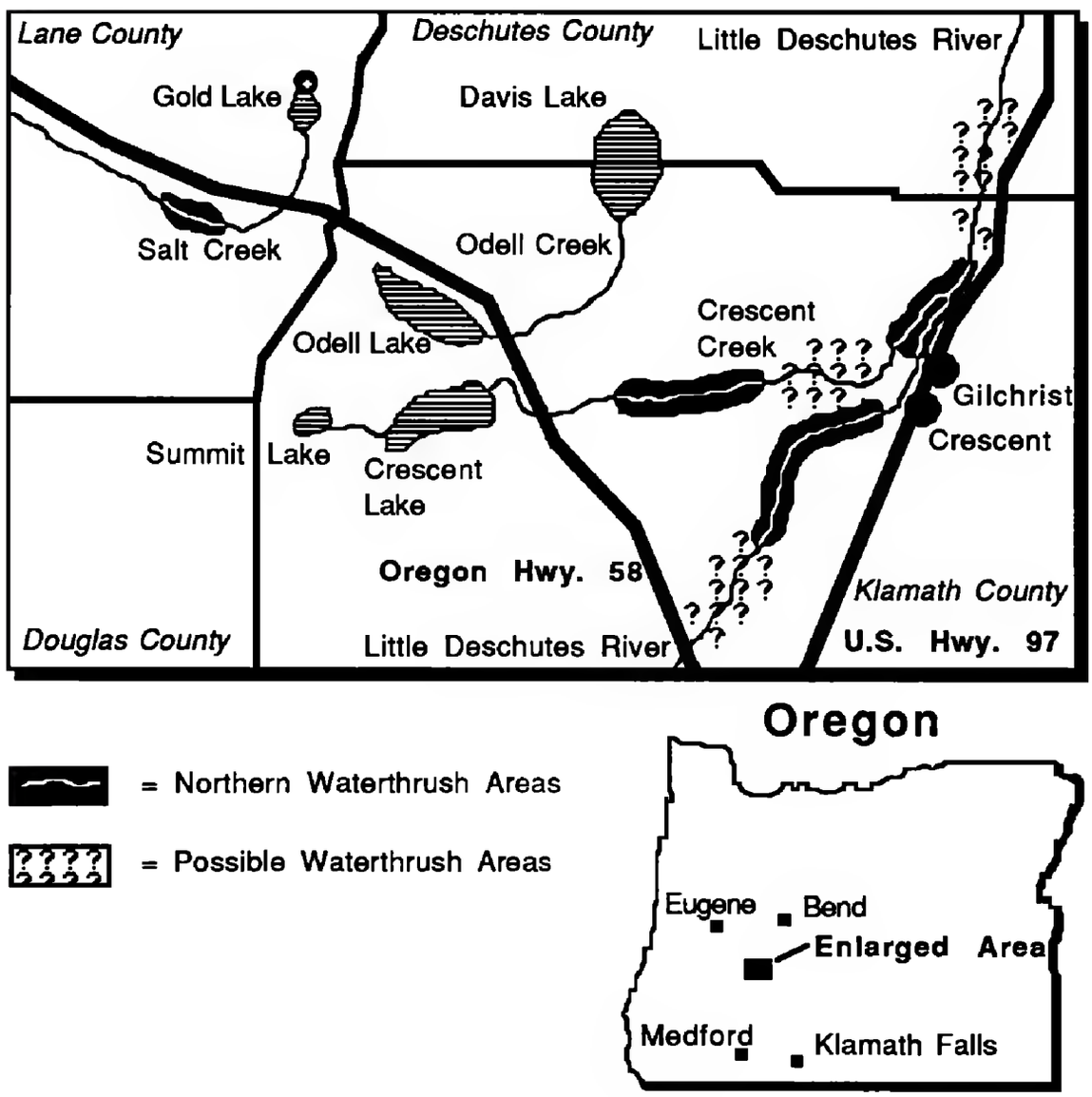


Figure 1. Northern Waterthrush summer range in Oregon.

thrush occurs in Idaho at least as far south as the St. Joe River southeast of Coeur d'Alene (David Fix pers. comm.).

On 4 June 1977, Mark Egger, Sayre Greenfield, and I found two Northern Waterthrushes at Crescent Creek Campground, 12 miles east of the Cascade crest in the Deschutes National Forest, Klamath County, Oregon (Egger, M. 1978. A probable nesting record of the Northern Waterthrush in Oregon. W. Birds 9:83-84; Greenfield, S. 1977. Northern Waterthrush. Ore. Birds 3:83). Later that month Larry McQueen found another bird 12 miles east along the Little Deschutes River north of the town of Gilchrist, Klamath Co. (Rogers, T. B. 1977. The nesting season. Northern Rocky Mountain-Intermountain Region. Am. Birds 31:1165). Crescent Creek is a tributary of the Little Deschutes River.

Many observers have subsequently found waterthrushes with some regularity at several locations along Crescent Creek and the Little Deschutes River near the towns of Gilchrist and Crescent (Harry Nehls et. al. pers. comm.).

Waterthrushes have been found at these sites almost every summer since 1977. The area was not often visited by observers prior to discovery of the waterthrushes, so the birds may have been present unobserved for many years.

In July 1983, McQueen found two waterthrushes along Salt Creek, 4 miles west of the Cascade crest and about 15 air miles northwest of the Crescent Creek site (Evanich, J., and Fix, D. 1983. Field notes: summer 1983. Ore. Birds 9:97). Singing birds have been found there every year since 1983.

In 1986 a single waterthrush appeared at Gold Lake, about 3 miles northeast of the Salt Creek site. No birds were reported there in 1987.

The birds seem to prefer dense riparian willow (*Salix* sp.) thickets. They are usually found in willow clumps 5 to 8 feet high, with some Sitka Alder (*Alnus sinuata*), intermixed with small grassy patches and pools of water left in old stream meanders. The few efforts to locate a nest have been unsuccessful, in part because this dense, low vegetation is very difficult to penetrate.

The dominant vegetation away from the immediate riparian zone is Lodgepole Pine (*Pinus contorta*) and Ponderosa Pine (*P. ponderosa*) at the east-slope sites, Lodgepole Pine and Douglas-fir (*Pseudotsuga menziesii*) along Salt Creek. The Salt Creek site also contains some Engelmann Spruce (*Picea engelmannii*).

The willow thickets used by the waterthrushes are common to most of the upper reaches of the Deschutes and other eastern Oregon rivers, and some of the unexamined habitat along Crescent Creek and the Little Deschutes River may also contain waterthrushes.

A single bird was found 7 June 1987 at Cold Springs Campground, Deschutes Co. (Anderson, D. 1988. Eastern Oregon field notes, summer 1987. Ore. Birds 14:87). Cold Springs is about 55 miles north of Gilchrist and is an area of open pine and aspen forest with very little streamside vegetation. This bird was probably a vagrant, but nearby areas in Deschutes County contain vegetation similar to that used by the birds at Little Deschutes and Crescent creeks.

Whether the species will expand in Oregon remains to be seen. but the central Cascade population has at least remained stable and may have expanded during the ten years birders have been aware of it.

I thank David Fix, Steve Heinl, Harry Nehls, and Wayne Weber for their comments and contributions to this note.

Accepted 2 March 1988

BOOK REVIEW

RICHARD E. WEBSTER, P. O. Box 6318, San Diego, California 92106

Distributional Checklist of North American Birds. 1986. David DeSante and Peter Pyle. Artemisia Press, P. O. Box 119, Lee Vining, CA 93541. xiv + 442 pp., 54 pen and ink sketches. $29.95 (includes postage and handling); California residents add 6% sales tax.

This is a volume of many purposes. Perhaps it is not a great success in any one of them, but in combination the volume will offer something to many. Because it is a somewhat odd amalgam, it is a volume you may wish to examine before purchasing.

The format: a grid, with the species down the left side and the provinces and states of Canada and the United States across the top. If a species has occurred in a particular area, the corresponding square contains a simple code (e.g., "uS" stands for "uncommon in summer") showing the species' status in that province or state. The grid is complete, and that is probably the way it should be, but you can imagine the number of blank squares in the tubenoses and alcids.

The authors offer three purposes. First, the work is to present a compendium of annotated state and province lists. In a limited fashion, its success is great. The authors have expended considerable effort to define the easily understood but precise code system and to be thorough; they contacted many regional authorities for review. While this one volume conveniently satisfies a wide-ranging curiosity, it can satisfy only a limited one. Thus, if you want to know the status of any species to the level of "uS," the book works well; if you wish to know more, head to the library to consult the works listed in the bibliography at the back of the book.

The second purpose is to provide a means for keeping life, state, and province lists. The grid squares, measuring 1.4 × 1 cm, offer adequate space to check off your life sighting, but you will need a rapidograph to enter any further detail. Still, a happy lister with a set of colored felt pens could probably have much fun.

The third purpose is akin to the first. The hope seems to be that the consistency provided by one set of authors using a set system will allow useful inter-region comparisons and provide a data base for studies of changes in avian distribution in North America. Whether or not I am correct in questioning the premises behind the authors' purpose, it is unlikely that this is a purpose relevant to the concerns of many potential purchasers.

The authors offered three purposes; I add a fourth: visual pleasure. Fifty-four full-page illustrations are roughly split between Keith Hansen and F. P. Bennett, Jr., and remind one that birds can look terrific in plain ol' black ink. While liking Bennett's bold images greatly, I was especially impressed with the imagination shown in Hansen's compositions. Both are to be commended particularly for the faithful matching of the background to the species illustrated. While I feel I must stop just short of recommending purchasing this

volume solely for the art, if the book appeals to you for any other reason, the illustrations will reward you for years to come.

Purchasers will undoubtedly find other uses. As one friend noted, the book can be the foundation for many games of birder trivia. In how many states has Western Kingbird not been recorded? If you want the answer, or suspect the answer is of the type you will often want answered, buy the book.

Black-capped Chickadee *Sketch by Steve Riddle*

Volume 19, Number 1, 1988

Passerine Migration Along the Inner Coast Range of Central California *L. Richard Mewaldt and Susan Kaiser* 1

Breeding Ecology of a Willow Flycatcher Population in Grand Canyon, Arizona *Bryan T. Brown* 25

NOTES

A Semipalmated Plover Nest in Oregon *Gary L. Ivey, Kent A. Fothergill, and Karlyn L. Yates-Mills* 35

Status of Great Blue Heron Colonies in King County, Washington *Marty Murphy* 37

Northern Waterthrush Summer Range in Oregon *Alan Contreras* 41

Book Review *Richard Webster* 43

Bulletin Board 45

Cover photo by © Daniel Lee Brown, of Sacramento, California: Northern Pygmy-Owl (*Glaucidium gnoma*), Tule Lake National Wildlife Refuge, California, February 1988.

Western Birds solicits papers that are both useful to and understandable by amateur field ornithologists and also contribute significantly to scientific literature. The journal welcomes contributions from both professionals and amateurs. Appropriate topics include distribution, migration, status, identification, geographic variation, conservation, behavior, ecology, population dynamics, habitat requirements, the effects of pollution, and techniques for censusing, sound recording, and photographing birds in the field. Papers of general interest will be considered regardless of their geographic origin, but particularly desired are reports of studies done in or bearing on the Rocky Mountain and Pacific states and provinces, including Alaska and Hawaii, western Texas, northwestern Mexico, and the northeastern Pacific Ocean.

Send manuscripts to Philip Unitt, 3411 Felton Street, San Diego, CA 92104. For matter of style consult the *Suggestions to Contributors to Western Birds* (8 pages available at no cost from the editor) and the *Council of Biology Editors Style Manual* (available for $24 from the Council of Biology Editors, Inc., 9650 Rockville Pike, Bethesda, MD 20814.

Reprints can be ordered at author's expense from the Editor when proof is returned or earlier.

Good photographs of rare and unusual birds, unaccompanied by an article but with caption including species, date, locality and other pertinent information, are wanted for publication in *Western Birds*. Submit photos and captions to Photo Editor.

WESTERN BIRDS

Vol. 19, No. 2, 1988

WESTERN BIRDS

Quarterly Journal of Western Field Ornithologists

President: Tim Manolis, 808 El Encino Way, Sacramento, CA 95864

Vice-President: Narca A. Moore-Craig, P.O. Box 254, Lakeview, CA 92353

Treasurer/Membership Secretary: Howard L. Cogswell, 1548 East Avenue, Hayward, CA 94541

Recording Secretary: Jean-Marie Spoelman, 4629 Diaz Drive, Fremont, CA 94536

Circulation Manager: Jerry R. Oldenettel, 4368 37th Street, San Diego, CA 92105

Directors: Peter Gent, Virginia P. Johnson, John S. Luther, Guy McCaskie, Timothy Manolis, Robert McKernan, Narca Moore-Craig, Joseph Morlan, Janet Witzeman

Editor: Philip Unitt, 3411 Felton Street, San Diego, CA 92104

Associate Editors: Cameron Barrows, Tim Manolis, Narca A. Moore-Craig, Thomas W. Keeney

Layout Artist: Virginia P. Johnson

Photo Editor: Bruce Webb, 5657 Cazadero, Sacramento, CA 95822

Review Editor: Richard E. Webster, P.O. Box 6318, San Diego, CA 92106

Secretary, California Bird Records Committee: Don Roberson, 282 Grove Acre Ave., Pacific Grove, CA 93950

Editorial Board: Robert Andrews, Alan Baldridge, Andrew J. Berger, Laurence C. Binford, David F. DeSante, Jon L. Dunn, Richard Erickson, Kimball L. Garrett, Joseph R. Jehl, Jr., Ned K. Johnson, Virginia P. Johnson, Brina Kessel, Stephen A. Laymon, Paul Lehman, John S. Luther, Guy McCaskie, Joseph Morlan, Harry B. Nehls, Dennis R. Paulson, Stephen M. Russell, Oliver K. Scott, Ella Sorensen, Richard W. Stallcup, Charles Trost, Terence R. Wahl, Roland H. Wauer, Bruce Webb, Wayne C. Weber, Richard E. Webster

Membership dues, for individuals and institutions, including subscription to *Western Birds:* Patron, $1000; Life, $250; Supporting, $50 annually; Contributing, $25 annually; Regular, $14 U.S. ($17 outside U.S.) annually. Dues and contributions are tax-deductible to the extent allowed by law.

Send membership dues, changes of address, correspondence regarding missing issues, and orders for back issues and special publications to the Treasurer. Make checks payable to Western Field Ornithologists.

Back issues of *California Birds/Western Birds:* $15 per volume, $4.00 for single issues. Xerox copies of out of print issues (Vol. 1, No. 1; Vol. 2, Nos. 1 and 4; Vol. 6, No. 2): $4.50 each. *Checklist of the Birds of California:* $2.00 each, 10 or more $1.50 each. *Pelagic Birds of Monterey Bay, California:* $2.50 each, 10 or more $2.00 each, 40 or more $1.50 each. All postpaid.

Published September 16, 1988 ISSN 0045-3897

WESTERN BIRDS ADVERTISING RATES AND SPECIFICATIONS

Full page	4 x 6¾ inches	$60 per issue	$200 per year
Half Page	4 x 3⅜ inches	$40 per issue	$130 per year
Quarter Page	4 x 1 1/16 inches	$30 per issue	$110 per year

Offset printing, one column per page, 4 inches wide. Glossy, black and white photos are acceptable; half-tone screen size: 133 line. Photo-ready copy is requested. If this is not possible, extra charges for typesetting will be made as follows: $15 full page, $10 half page, $5 quarter page. Send copy with remittance to the Treasurer. Make checks payable to Western Field Ornithologists. A 15% commission is allowed for agencies.

WESTERN BIRDS

Volume 19, Number 2, 1988

BREEDING BIOLOGY AND BEHAVIOR OF HAMMOND'S AND WESTERN FLYCATCHERS IN NORTHWESTERN CALIFORNIA

HOWARD F. SAKAI, United States Department of Agriculture Redwood Sciences Laboratory, 1700 Bayview Drive, Arcata, California 95521

The Hammond's (*Empidonax hammondii*) and Western (*E. difficilis*) flycatchers are sympatric within portions of their breeding ranges in northwestern California. Westerns are common in a variety of habitats (Bent 1942:247, Johnson 1980:11-23); Hammond's are more abundant at higher elevations (Bent 1942:226, Johnson 1963:140-143). Only one major study of each species' breeding biology has been reported; both looked at the species in places where they do not occur together. Davis et al. (1963) studied the breeding biology of Westerns in a hardwood-dominated forest in northern Monterey County, California. Davis (1954) studied the breeding biology of Hammond's in mixed coniferous and deciduous forests at Flathead Lake, Montana. More knowledge is needed of both species' breeding ecology and behavior where they are sympatric on their nesting grounds. I report here on a comparative study of the breeding behavior and biology of color-marked birds.

STUDY AREAS AND METHODS

I selected twelve stands of Douglas-fir (*Pseudotsuga menziesii*)-hardwood forest in Humboldt and Trinity counties of northwestern California (Figure 1). The 12- to 20-ha stands were selected on the basis of size and accessibility. They lie between 710 and 1235 m elevation. Between April and August, four observers spent 1444 total person-hours in the field in 1984; two observers spent 2442 total hours in 1985 and 836 total hours in 1987. On the basis of my observations of both species' phenology, I divided observations into four periods: prenesting (10 April to 15 May), nest building and incubation (16 May to 15 June), brooding (16 June to 15 July), and postbrooding (16 July to 15 August). Despite some differences in nesting phenology, I believe that the two species' nesting behaviors were sufficiently synchronous that this classification is satisfactory for both.

Three Western and two Hammond's nests were intensively observed from the nest-building phase through the fledging of the young. Additional information came from observation of 2 to 21 additional Hammond's nests and 13 to 81 additional Western nests. Incubation periods were determined from the laying of the last egg to hatching of the young. For both species, I used the first day the female was sitting in the nest as the day of laying of the last egg, and the day when the young were first fed as the day of hatching of the last young.

I estimated nest success by using Mayfield's model (1961, 1975), in which nest observations are treated as discrete units for computation of specific development stages (e.g., incubation or nestling). Mayfield's model is based on the concept of exposure days: one nest observed for 1 day equals 1 exposure day. This model incorporates all observed nests, both successful and unsuccessful, and accounts for the length of time each was observed.

Mist nets were placed near foraging pairs and near routes to and from nests. Birds were sexed as males if they had a cloacal protuberance (Salt 1954, Wolfson 1954) or as females if they had a brood patch (Bailey 1952, Hinde 1962), and they were aged by skull pneumatization (Norris 1961). In addition, Westerns with incompletely pneumatized skulls were aged according to the plumage criteria of Johnson (1974). Hammond's with incompletely pneumatized skulls were also aged according to the shape of their rectrix tips (Johnson 1963).

In the analysis of the data, all years and all stands were combined. I used a contingency table (Sokal and Rohlf 1981) to test the null hypothesis of no difference between the ages (older than two years versus younger or second

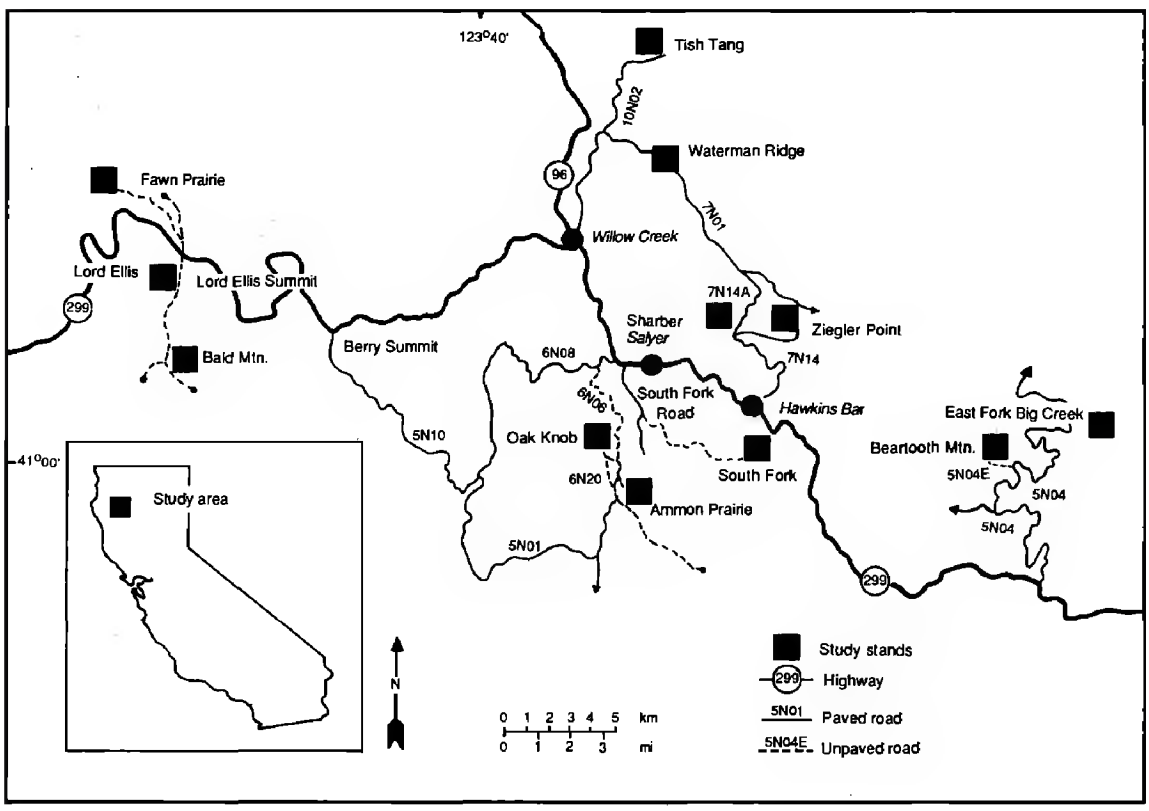


Figure 1. Locations of the study areas in northwestern California.

year) of breeding adult Westerns. The samples for Hammond's consisted of fewer than 5 observations per cell so I did not conduct the test for that species.

RESULTS

Nesting Chronology

Hammond's Flycatchers were found as summer residents in 6 of the 12 study stands, with the earliest birds arriving on 24 April (Figure 2). Their numbers increased up to around mid-May. Westerns were summer residents in all study areas, with the earliest birds arriving on 7 April (Figure 2); their numbers increased until around 20 April. Although Hammond's arrived on the breeding grounds later than Westerns, they fledged young at about the same time (Figure 2).

Sex Identification by Aural Cues

I noted that the Westerns had two notes, a metallic "pink" and a more hollow "pik." The "pik" note was given by both sexes and was usually heard during the nestling period, whenever adults brought food. Incubating females gave the "pink" note before they left the nest and, while off the nest, consistently gave a series of these calls, probably serving as location or alarm notes. The male Westerns occasionally gave a similar alarm call, whenever Steller's Jays (*Cyanocitta stelleri*) were close to the nest. The female rarely called from the nest except to emit a few "pink" notes just before departing, probably in response to the calling male. While off the nest, she repeatedly gave "pink" alarm or location calls, while the male responded with "tsuuit"

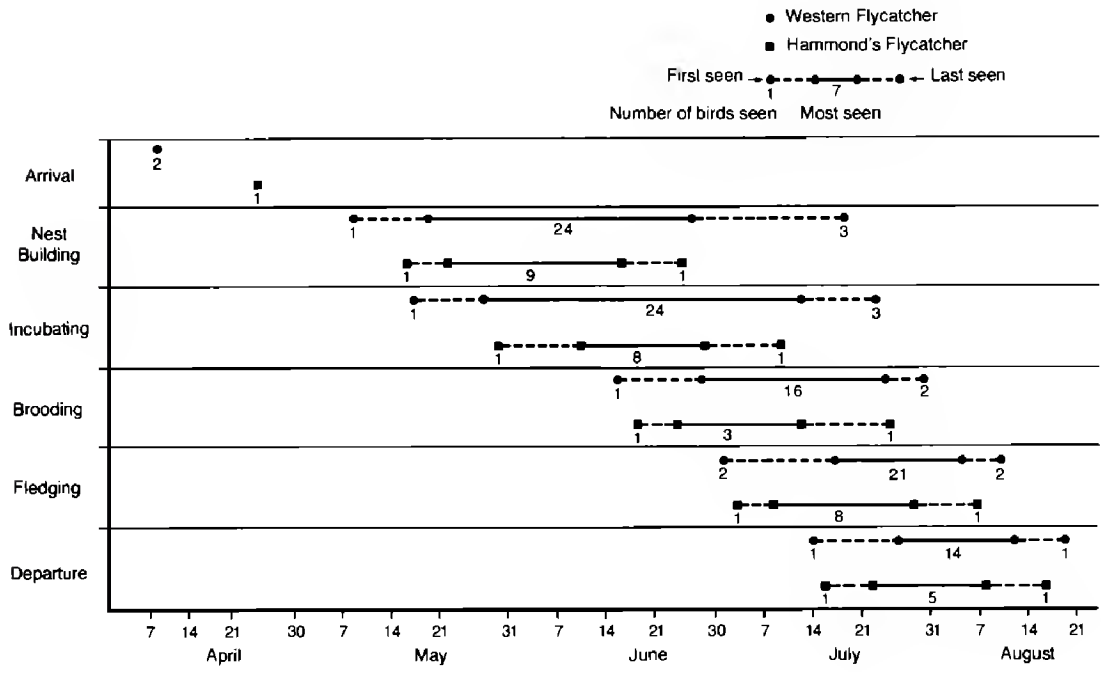


Figure 2. Nesting chronology of Hammond's and Western flycatchers on breeding grounds in northwestern California, as determined from behavioral observations and censuses conducted in 1984, 1985, and 1987.

position calls. When jays were nearby, the male frequently sounded the "seet" alarm call, while the incubating female sat quietly in the nest. In four cases, however, the male also used the "pink" alarm call when jays were close to the nest. Males also gave "tsuuit" position calls prior to the female's leaving the nest. A harsh "chrrip" was given by males engaged in chasing encounters.

Both sexes of Hammond's emitted a harsh "peep" call, which they used as an alarm note while engaged in chasing bouts. The females also gave occasional crisp "pip" location calls while off the nest. Females always left the nest and returned to it silently.

Skull Pneumatization and Age of Breeding Adults

Birds older than two years (after second year, ASY) were distinguished from second-year (SY) birds on the bases of skull pneumatization and rectrix shape. ASY Westerns were found in higher proportion in June than in July ($\chi^2 = 18.42$, df = 1, $P < 0.001$) (Figure 3). ASY Hammond's were also found in higher proportion in June than in July; however, the sample size was small.

The Nest

Hammond's nests appeared distinctly different from Western nests. The outer bowl of 21 Hammond's nests were taller, more tightly woven, and mimicked the surrounding substrate more than did 81 Western nests. The outer bowl of the single retrieved Hammond's nest contained mostly white scale lichens (e.g., *Hypogymnia inactiva),* moss (e.g., *Dendroalsia abietina, Homalothecium nutallii*), bryophytes (e.g., *Porella navicularis, Isothesium* sp., and *Alsia* sp.), and some stringy lichen (*Ramalina menziesii*). Stringy lichen, bird feathers, and Douglas-fir leaf scales lined the cup. In fourteen observations, a hovering female Hammond's gathered scales up to six consecutive times from the outer foliage of Douglas-fir branches.

The outer bowl of 22 retrieved Western nests contained mostly moss and some scaly lichen (*H. inactiva*), occasionally the paper-thin bark of the madrone (*Arbutus mcnziesii*) and other coarse materials. Stringy lichen lined the cup. These nests were not camouflaged because the same types of nesting materials were used on all substrates. Even nests built on grassy banks did not include grass in the bowl construction but resembled the typical moss-lichen nest. The moss and lichens were held together with spider webs, which also helped secure the nest base to a surface.

Nest Building

In 14 hours of observation of three color-marked pairs of Hammond's Flycatchers, a male was observed assisting the female in gathering Douglas-fir scales for the nest lining only twice. While building the nest, the female compressed the material by rotating herself in the nest. Observations at two nests suggested that both pairs took about 5 to 6 days to complete their nests. Among all four color-marked pairs of the Western observed over the complete building sequence, only the female was seen building the nest. Nest completion averaged 5.5 days (range 5-6 days; SD = ± 0.58; $n = 4$).

Both species renested following nest predation or abandonment. Sixteen pairs of Westerns and seven pairs of Hammond's were observed building second nests, and two pairs of Hammond's nested three times. However, the species differed markedly in their methods of building replacement nests. In all instances of nest abandonment, Hammond's females completely removed all material from the old nest to use in building the replacement. In contrast, female Westerns did not remove any material from abandoned nests for renest attempts. It was not unusual to find replacement nests of both species close to their abandoned nests. In 1984, a female Hammond's built a second

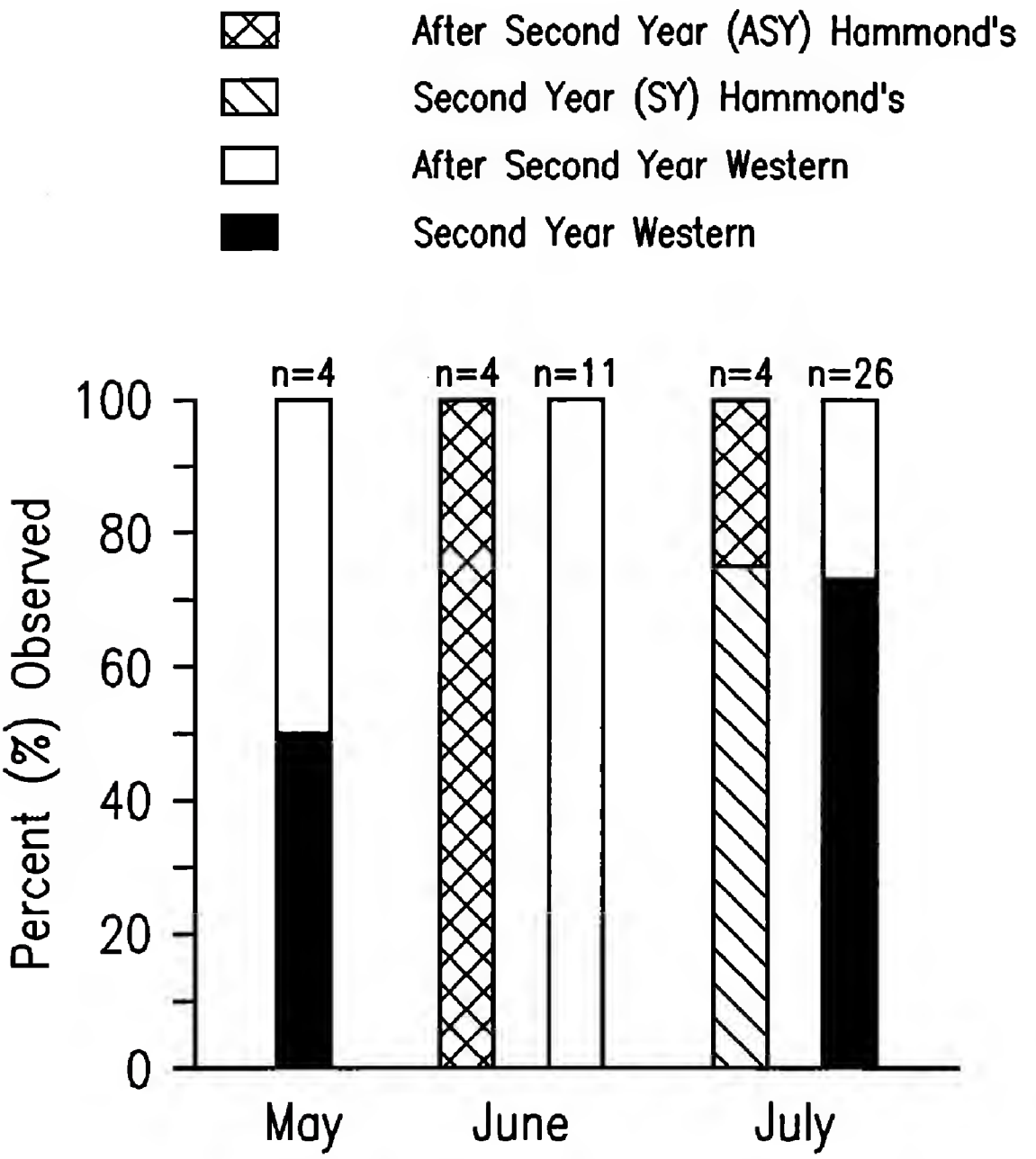


Figure 3. Chronological changes in age composition of mist-netted Hammond's (n = 8) and Western Flycatchers (n = 41) in Humboldt and Trinity counties, as determined by skull pneumatization and rectrix shape. Ages: after second year = adult birds with 100% ossification and blunt rectrix tips; second year = subadult birds with 90% ossification and pointed rectrix tips.

nest in the same tree as the first, and a third nest was built 10 m from the second. In 1985, a pair built a second nest about 20 m from the first and a third about 11 m from the second. In 1985 and 1987, female Westerns built second nests an average of 15 m (range 4-46 m; SD = ± 10.2; n = 13) from their abandoned nests.

Clutch Size

A single Hammond's nest, observed in 1985 during late incubation, had three eggs. Observations of two other Hammond's nests in early incubation suggested that the female took 4 days to lay a clutch of at least three eggs, since three nestlings fledged. The average clutch size for Western was 3.3 eggs (range 2-4 eggs, SD = ±0.52, n = 33) per nest.

Incubation and Nest Attentiveness

In both species, only the female incubated. On the basis of two intensively studied successful nests, Hammond's spent 15.5 days incubating. Female Westerns in three intensively studied successful nests spent an average of 16 days (range 15-17 days; SD = ± 1.0) incubating.

The two species were alike in nest attentiveness (Figure 4). In both species, the incubating female foraged for herself, the male rarely visiting. I found that the male Westerns remained within 25 m of the nest tree. However, they remained quiet unless predators, such as jays, were nearby.

It was easier to predict for the Western than for the Hammond's when a female was planning to return to its nest. Western females frequently gave a "pink" note while off the nest, but before returning they suddenly became silent. The female rarely flew directly to her nest. Instead, she would fly close to the nest and quietly sit on a perch, flicking her tail for several seconds to a minute, before flying to the nest. Hammond's females were usually rather quiet while off the nest. They generally flew silently and directly to the nest without pausing on any perch.

Parental Care of the Young

I observed no male Western Flycatchers brooding; however, I once observed a male Hammond's Flycatcher already brooding when observations began at 0900. He continued to brood for 7 min before being relieved by the female. At the three regularly observed Western nests, nestlings were brooded solely by the female for an average of 5.3 days (range 5-6 days; SD = ± 0.53). Western females at three intensively studied nests spent close to 90% of their time brooding in the early part of this period (Figure 5). Observations of two intensively studied nests revealed that Hammond's covered their young for periods of 5 and 6 days.

In two regularly studied Hammond's nests, the nestling period took 16 days for one nest and 17 for the other. Over 29 hours of observation, both male and female Hammond's fed the nestlings from the first day of hatching. For Westerns, the nestling period took 16 days for two nests and 17 days for one. On the basis of 71 hours of observing three nests, I found that both male and female Westerns fed the nestlings.

The feeding rate for two pairs of Hammond's increased after the first two days, leveled off after a week, and remained there before declining sharply prior to fledging (Figure 6). The feeding rate at three Western nests had two peaks, on the 6th and 11th days (Figure 6).

Fledging Period

Young of both species displayed similar fledging behavior. In two Hammond's nests, the nestlings started to move actively about in the nest about a

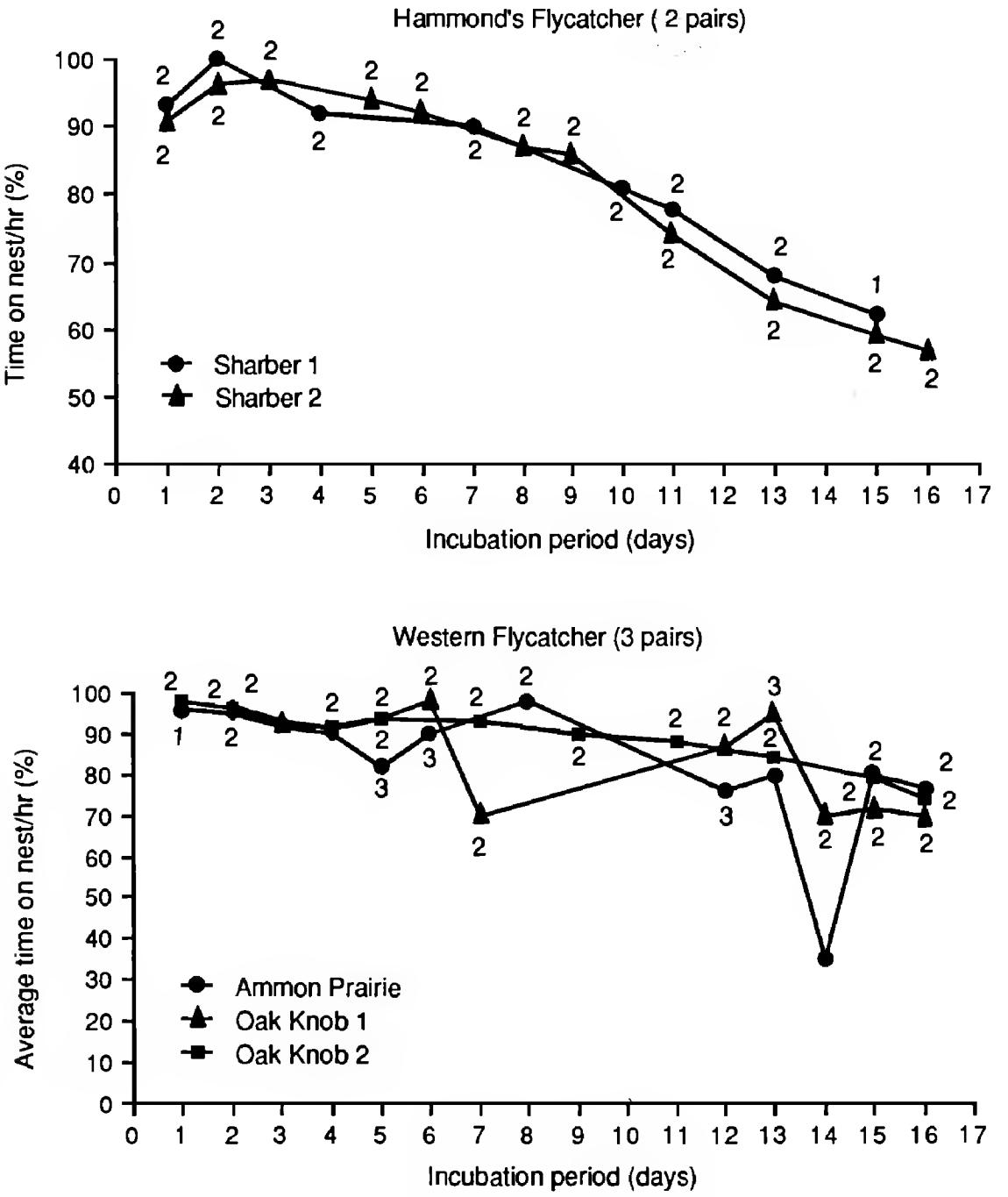


Figure 4. Nest attentiveness of incubating female Hammond's and Western flycatchers, as determined from successful nests. Numbers accompanying each point indicate the number of continuous hours of nest observation on which the percentage is based.

week before fledging. Five days before fledging, they exercised their wings. At two days before fledging, the fully feathered nestlings flapped vigorously from the nest rim and then flew intermittently to nearby twigs. Although the actual departure from the nest was not observed, the young remained in the stand for at least a week, when the young were seen with the banded adults approximately 175 m from the nest tree.

Western young actively flapped their wings 3 to 4 days before vacating the nest. For nests built on ledges of natural cavities, no practice flights were observed, although the young fluttered while perched on the cavity rim. The young were very uncoordinated during fluttering. They remained within 0.5 m of each other while perched quietly in trees near the nest tree. Fledged young chirped loudly and quivered their wings whenever adults brought

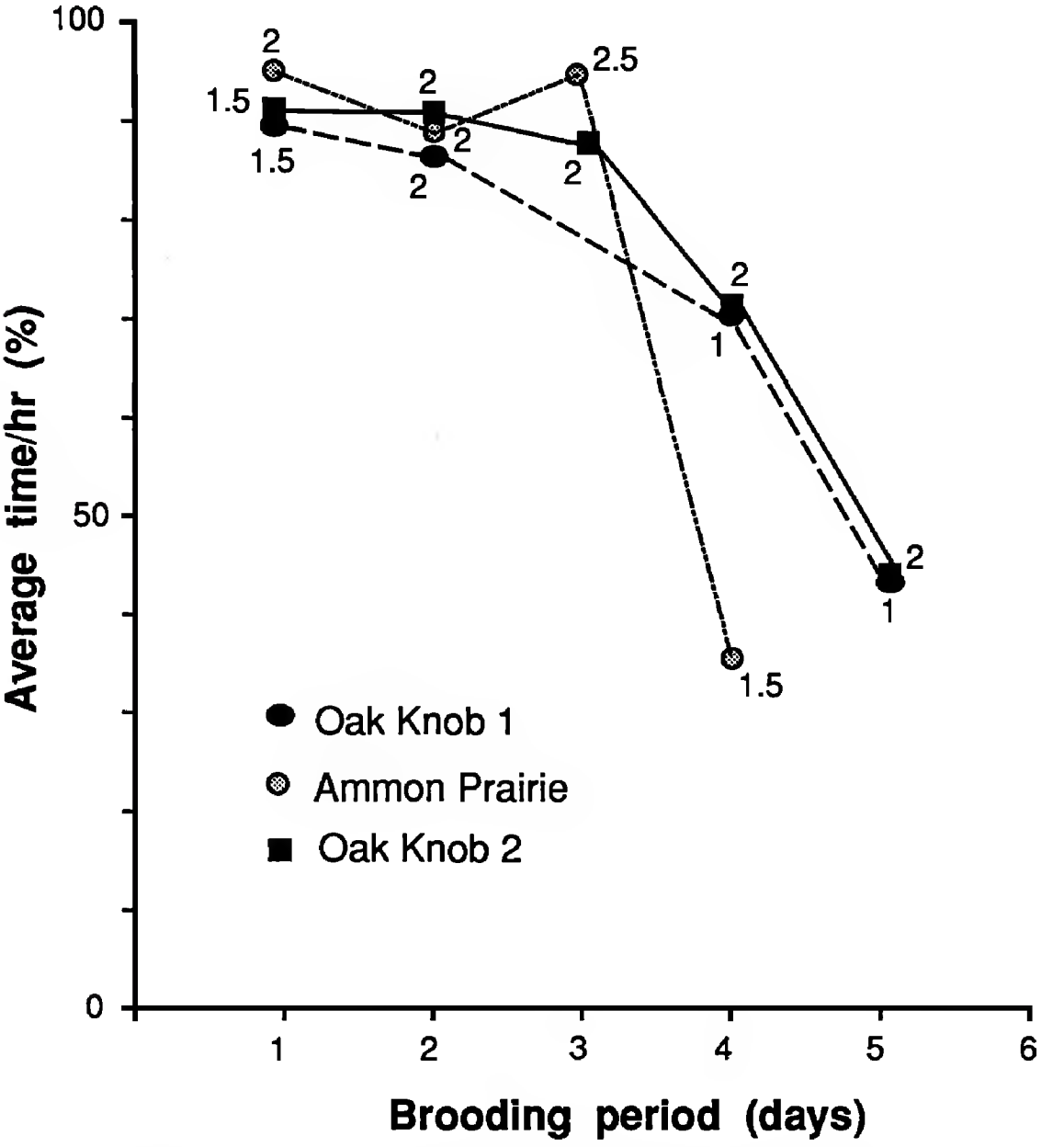


Figure 5. Nest attentiveness of three pairs of brooding female Western Flycatchers. Numbers accompanying each point indicate the number of continuous hours of nest observation on which the percentage is based.

food. Following fledging, the young did not return to the nest tree but stayed near the nest stand for at least 6 to 7 days.

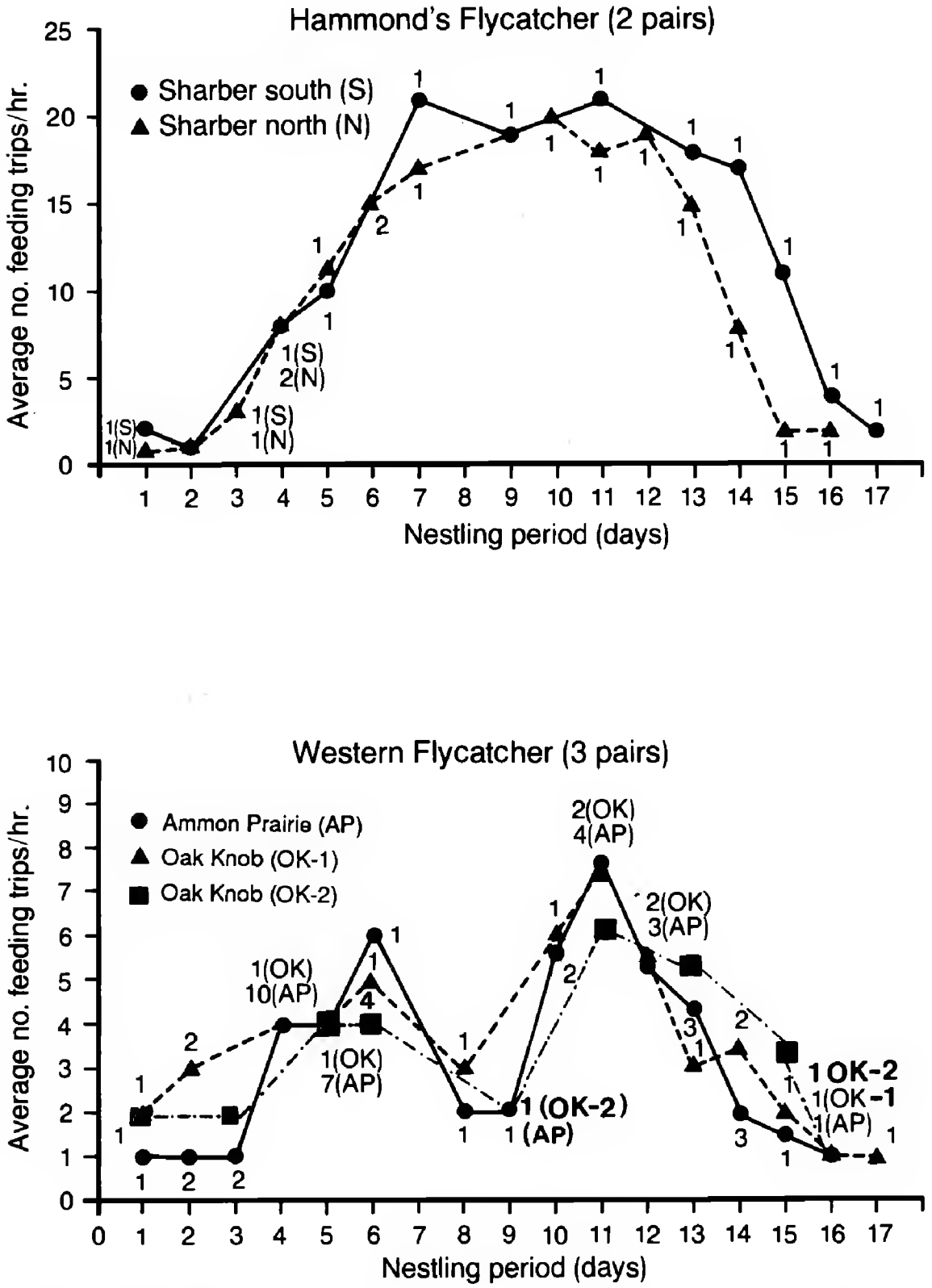


Figure 6. Feeding rates over the nestling period of Hammond's and Western flycatchers at successful nests. Numbers accompanying each point indicate the number of continuous hours of nest observation on which the average number of feeding trips per hour is based.

Site Tenacity

Site tenacity was documented in three instances. A banded female Western built her first nest about 30 m from the previous year's site but subsequently abandoned it when the third egg was damaged. She relocated to the previous year's site, atop the old nest, and fledged a brood. The other color-banded birds, a female Western and a male Hammond's, were observed breeding in the vicinity of the nest site of the previous summer. All three color-marked birds were paired with new unbanded mates.

Nesting Success

For Hammond Flycatchers, the estimated survival probability was 49% during the incubation period and 51% during the nestling period (Table 1). The probability of survival through both periods was 48%. The number of total exposure days during the incubation and fledging periods was 32.0. For Western Flycatchers, the estimated survival probability was 46% during the incubation period and 55% during the nestling period (Table 1). The total exposure days for both periods were virtually the same as for Hammond's.

For Westerns, nest-site selection accounted for 21% (6 of 29 nests observed during nest building) of the total nest failures. Of the six failed nests placed between loose bark, four were built by yearling females. For Hammond's, one out of ten known failures observed during the nest-building period was due to nest-site selection. This nest was built on branches exposed to strong prevailing winds and was destroyed during a windstorm.

Nest predation during the incubation and nestling periods also contributed to nest failure of both species. Of ten Hammond's nests studied during the periods of incubating and brooding, predators took five. Three of them were preyed upon by Steller's Jays. Of 41 nests of incubating and brooding Western Flycatchers, 14 with eggs or nestlings were victimized by predators. I observed Steller's Jays prey on 10 of these nests and a Chickaree (*Tamiasciurus douglasi*) take one nest with eggs. The other two nests lost to

Table 1 Survival Probabilities of Hammond's and Western Flycatchers

Species and Study	Nests	Nests lost	Nest days	Daily survival probability	Exposure days	Survival probability
Incubation period						
Western						
This study	37	23	490	0.95	16.0	0.46
Davis et al. (1963)	23	2	304	0.99	15.0	0.86
Hammond's	12	5	112	0.96	15.5	0.49
Brooding period						
Western						
This study	34	18	506	0.96	16.5	0.55
Davis et al. (1963)	20	4	220	0.98	16.0	0.75
Hammond's	7	2	50	0.96	16.5	0.51

predation I also suspected to have been plundered by Steller's Jays. The lining of these two nests resembled the pulled lining of the five nests taken by jays. These pulled linings were caused by the resisting chicks grasping the lining as the jay pulled them from the nest.

DISCUSSION

I found the following differences and similarities between the breeding biologies of Hammond's and Western flycatchers: (1) incubating female Westerns were more predictable in returning to nests than Hammond's; (2) Westerns did not reuse materials from abandoned nests as did Hammond's; (3) Westerns arrived on the breeding grounds much earlier than did Hammond's, yet both fledged young at about the same time; (4) the outer bowls of Hammond's nests were higher and more tightly woven than those of Western nests; (5) site tenacity was observed for both species, when they relocated at nest sites used the previous summer; and (6) selection of poor nest sites and predation of nests by Steller's Jays and Chickarees contributed to the poor nesting success in my study area. Observations of color-marked Hammond's and Western also helped to corroborate some observations made by Davis (1954) and Davis et al. (1963). However, I found the following differences between my results and those of Davis et al.: in my study area (1) male Westerns did not call frequently to incubating females; (2) the birds did not produce second broods if the first brood fledged; (3) survival rates were much lower during incubation and brooding periods; (4) females remained quiet during the incubation and brooding periods; and (5) males sometimes sounded like females, as they occasionally uttered the "pink" note. These apparent differences between studies illustrate the importance and need for more descriptive studies of nesting behavior throughout a species' range.

The finding that Westerns did not lay second clutches was supported by the fact that young did not appear until the first week of July. The young birds are easy to detect after fledging because of their vociferous behavior and their parents' highly visible and frequent feeding trips. Both species migrate from the study sites between late July and early August, leaving no time to renest.

ACKNOWLEDGMENTS

I thank Scott Edwards, Holly Hutcheson, Michael Schroeder, John Sterling, and Tom Quinn for their assistance in locating and observing nests and in maintaining a positive attitude during many exhausting hours in the field. Additional field observations were provided by members of the USDA Forest Service's old-growth field crews, and I appreciate all their efforts and support. I also thank Charles van Riper III, Ned Johnson, C. John Ralph, Martin Raphael, Jared Verner, David Manuwal, Michael Morrison, Cameron Barrows, and two anonymous reviewers for constructive comments on the manuscript.

LITERATURE CITED

Bailey, R. E. 1952. The incubation patch of passerine birds. Condor 54:121-136.

Bent, A. C. 1942. Life histories of North American flycatchers, larks, swallows, and their allies. U.S. Natl. Mus. Bull. 179.

Davis, J., Fisler, G. F. and Davis, B. S. 1963. The breeding of the Western Flycatcher. Condor 65:337-382.

Davis, D. E. 1954. The breeding biology of Hammond's Flycatcher. Auk 71:164-171.

Hinde, R. A. 1962. Temporal relationships of brood patch development in domesticated canaries. Ibis 104:90-97.

Johnson, N. K. 1963. Biosystematics of sibling species of flycatchers in the *Empidonax hammondi-oberholseri-wrightii* complex. Univ. Calif. Publ. Zool. 66:79-238.

Johnson, N. K. 1974. Molt and age determination in Western and Yellowish Flycatchers. Auk 91:111-131.

Johnson, N.K. 1980. Character variation and evolution of sibling species in the *Empidonax difficilis-flavescens* complex (Aves: Tyrannidae). Univ. Calif. Publ. Zool. 112:1-151.

Mayfield, H.F. 1961. Nesting success calculated from exposure. Wilson Bull. 73:255-261.

Mayfield, H. F. 1975. Suggestions for calculating nest success. Wilson Bull. 87:456-466.

Norris, R. A. 1961. A modification of the Miller method of aging living passerine birds. Bird-Banding 32:55-57.

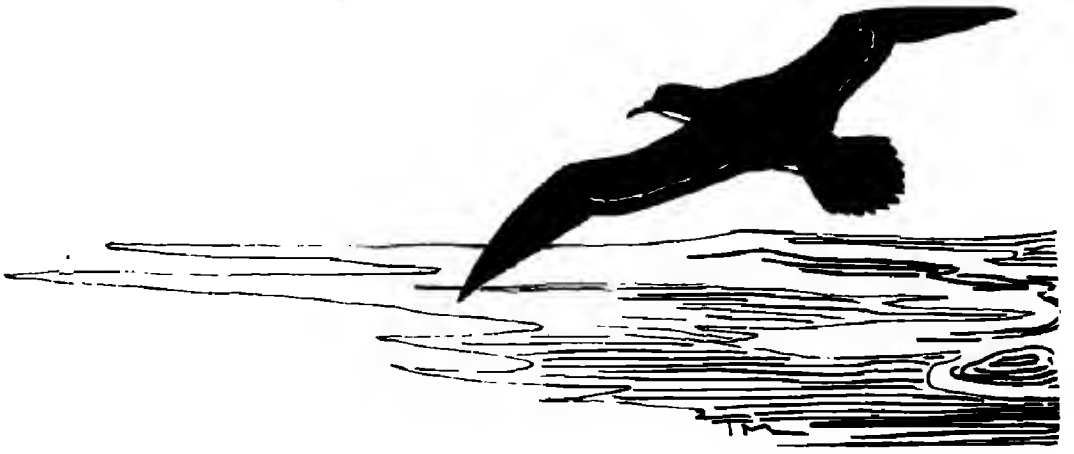
Salt, W. R. 1954. The structure of the cloacal protuberance of the Vesper Sparrow and certain other passerine birds. Auk 71:64-73.

Sokal, R., and Rohlf, F. 1981. Biometry. Freeman, San Francisco.

Wolfson, A. 1954. Sperm storage at lower-than-body temperature outside the body cavity in some passerine birds. Science 120:68-71.

Accepted 30 March 1988

The following article is the first in a series on California rarities to be edited by Joseph Morlan and Don Roberson. It is based on materials submitted to the California Bird Records Committee (CBRC). The description and circumstances were drawn from the accounts of the observers and have been reviewed by them. Roberson prepared the distributional summary; Morlan prepared the identification summary. In this way we hope much important information accumulated in CBRC files will become widely available.



Wedge-tailed Shearwater *Sketch by Tim Manolis*

FIRST RECORD OF THE WEDGE-TAILED SHEARWATER IN CALIFORNIA

RICHARD STALLCUP, Box 36, Inverness, California 94937
JOSEPH MORLAN, 417 Talbot Ave., Albany, California 94706
DON ROBERSON, 282 Grove Acre Ave., Pacific Grove, California 93950.

On 31 August 1986, Stallcup was leading a pelagic trip for the Point Reyes Bird Observatory. At about 0900, he was standing at the stern of the *Sea Wolf* about 4 nautical miles due west of Point Pinos, Monterey County, when an unusual shearwater glided by, heading toward a large flock of gulls and shearwaters in the boat's wake. The bird was very close and it took him a second to realize that it was not any expected species. He shouted "What is that? What is that bird? Get onto that bird!" The shearwater melted into the flock but quickly reappeared about 40 feet behind the boat. Its unique shape, dark bill, pink feet, and nearly uniform dark brown upperparts suggested a Wedge-tailed Shearwater *Puffinus pacificus*, a species Stallcup had seen off western Mexico and southeastern Australia.

All 20 other observers clustered at the stern, many struggling to see details as Stallcup yelled out "What's the precise underwing pattern? Is the bill all dark? Who has a camera?' Then he remembered his own camera and was soon photographing the shearwater, guessing at the proper exposure, until he ran out of film. He obtained 17 photos (including Figures 1-3); Alan K. Thomas obtained one more (Figure 4). Fortunately the bird was very cooperative, staying in the wake for an estimated 10-12 minutes. It was often the bird closest (30-50 feet) to the ship but sometimes drifted back or landed

on the water. It flew outside the flock, up one side or the other, crisscrossing and quartering and dropping on tidbits of chum. The quartering maneuvers provided excellent views of the spread tail and often of the dangling legs and feet.

Stallcup obtained LORAN readings from the captain (placing the bird at 36° 38′ 16 N, 122° 04′ 27 W) and radioed another boat of birdwatchers about 35 miles west. This second group of observers scoured the area later that day, as did another chartered boat the following day, but the bird was not relocated.

Stallcup took the following description, compiled from field notes and with reference to the photographs:

A shearwater most like Buller's *P. bulleri* in size and shape but with a tail half again as long, much wider, and more flamboyant. The wings appeared long and slim in most views, but were wide, especially from the wrist inward (suggesting long secondaries?). The body was slimmer than that of the Pink-footed Shearwater *P. creatopus*, being more like Buller's in proportions, including those of the head and bill. The flight was extremely graceful, like Buller's, with effortless flapping broken by sustained gliding on bowed wings. The flaps were smooth, unlike the more labored flight of the Pink-footed, and this bird used the lift from the waves more efficiently. It usually stayed less than 3 feet from the surface, but occasionally wheeled up to perhaps 20 feet. When competing for chum it displayed three notable behaviorial characteristics: (1) it blatantly used its large tail to outmaneuver even the agile Heermann's Gulls *Larus heermanni*, quartering with its body to drop onto floating food items, reminding one of a harrier *Circus*, (2) it often foraged with its legs and feet hanging down, and (3) it sometimes pulled its head back a bit, giving an "Adam's apple" effect to its long neck.

The entire upperparts were dark without noticeable markings. The remiges and retrices were black above and below. The crown, face, nape and a large peninsular smudge projecting onto the side of the breast were blackish, merging with little contrast into the ebony brown back and upperwing coverts. The tips of some coverts (probably greater coverts) were paler (worn or pale-tipped?), forming a barely noticeable tan stripe near the trailing edge of the upperwing.

The chin, throat, breast, sides, belly, and flanks were pure white, but the demarcation from the dark upperparts was rather fuzzy. The undertail coverts and lower flanks were dark.

The underwing coverts were mostly white, separated from the white body by blackish axillars. The entire trailing third of the underwing, made up of the remiges, was dark, as was a narrow strip on the leading edge, only slightly wider than that of Buller's Shearwater. A dark diagonal line, from just inside the wrist on the leading edge to the posterior axillaries, isolated a small triangle of white on the underwing coverts, producing a field character apparently unique to the light morph of this species.

The bill appeared dark in the field, but was subtly black-tipped on the distal quarter and darkest blue-gray on the remaining basal portion. Eyes appeared dark. Legs and feet were pink, recalling those of Pink-footed Shearwater.

At Stallcup's suggestion, Ruben Balzer, Bill Manolis, Nancy Menken, Susan Peaslee, Alan Thomas, William Ure, and Katherine Wilson submitted additional descriptions. These were similar in most repects to Stallcup's, although Manolis described the back as "chocolate brown" and the feet as "flesh-colored."

The record was unanimously accepted by the California Bird Records Committee on the first circulation (Bevier in prep.). It constitutes the first record for California and for North America north of Mexico.

Figure 1. Wedge-tailed Shearwater, Monterey Bay, 31 August 1986. Note outline of white triangle on underwing coverts and long wedge-shaped tail.

Photo by Richard Stallcup

Figure 2. Wedge-tailed Shearwater, Monterey Bay, 31 August 1986. Note narrow pale tips to greater coverts forming a narrow wing stripe.

Photo by Richard Stallcup

Figure 3. Wedge-tailed Shearwater, Monterey Bay, 31 August 1986. Note the long, thin gray bill with slightly darker tip and black flight feathers contrasting with white wing linings.

Photo by Richard Stallcup

Figure 4. Wedge-tailed Shearwater, Monterey Bay, 31 August 1986. The head is pulled back, producing an "Adam's apple" effect, and the long secondaries give a distinctive broad-based appearance to the wings.

Photo by Alan K. Thomas

DISTRIBUTIONAL SUMMARY

The Wedge-tailed Shearwater ranges widely throughout the tropical Pacific and Indian oceans. It occurs in the eastern Pacific from Baja California (A.O.U. 1983) to Ecuador and throughout the central and western Pacific, north to Japan and south to southern Australia and New Zealand. It occurs in the Indian Ocean from western Australia to southern Africa and north to the northern Red Sea (Jouanin and Mougin 1979, Sinclair 1978, Shirihai 1987). All breeding colonies are on tropical or subtropical islands.

Pacific populations of this polymorphic species consist predominately of the light morph in the north (except at the Marianas and Revillagigedos) and the dark morph in the south (except at Sharks Bay, western Australia, where 20-30% of the birds are light; Blakers et al 1984), with 10° N latitude representing an approximate dividing line (King 1974). The breeding colonies nearest California are on San Benedicto Island, in the Revillagigedo group off southern Mexico, and in the Hawaiian Islands. The San Benedicto breeding population was two-thirds dark in 1898 but was nearly all dark by 1974 (Jehl and Parkes 1982). However, sightings at sea near the Central American coast (east of 120° W) are predominately of the light morph, with dark birds becoming more numerous only far offshore (between 120 and 150° W; Pitman 1986).

The Hawaiian population is estimated at 1.5 million birds (Haley 1984), and 97% of the birds around the main islands are of the light morph (Berger 1981). They nest from March to November, then move south to the Equatorial Countercurrent and east to waters off Central America, completing a molt prior to returning to their breeding colonies (Berger 1981, King 1974). A vagrant from this long migration route might account for the bird reaching Monterey during fall, as most other populations are nonmigratory (Jouanin and Mougin 1979) and most southern populations are dark. Large flocks usually remain near the Hawaiian breeding grounds until November, so this bird may have been a nonbreeder.

The bird was not associated with any storm or sea-temperature fluctuation (e.g., "El Niño"). Seas in the vicinity were calm with a three-foot ground swell; the weather was calm and overcast. King (1974) found the Wedge-tailed Shearwater insensitive to water temperature, as long as the temperature was above 21° C (70° F), and found it only slightly sensitive to salinity, preferring salinities above 34.6 parts per thousand. However, he cited two records from waters of 15° C (59° F), showing that the species is not entirely restricted to warm water. On 31 August 1986 the surface temperature at Hopkins Marine Station, Pacific Grove, 8 miles east inside Monterey Bay, was only 13.5° C (56.3° F) and temperatures off Point Pinos average even cooler (A. Baldridge pers. comm.). At Granite Canyon, about 15 miles south of the sighting, the temperature was 11.7° C (53.1° F; Scripps Institute of Oceanography 1987). Thus the water temperature where the shearwater was seen was probably no higher than 12° C. Sea temperatures in the Monterey Bay region were 2-4° C warmer at the beginning of August (Scripps Institute of Oceanography 1987) but had cooled by the end of the month.

The previous records nearest California were sightings of both light and dark birds 16 December 1956 off northern Baja California, Mexico (Murphy

1958), less than a day's cruise south of San Diego. The species is more regular off Cape San Lucas at the southern tip of Baja at about 21-22° N (Pitman 1986, Loomis 1918), nearly 500 nautical miles farther south. The northernmost previous records were of birds at 35° 26′ N in the central Pacific (King 1974) and a typhoon-blown dark bird at about 37° N at Toyama, Japan (Ornithol. Soc. Japan 1974). Though the occurrence off Monterey surprised many, Stallcup had previously predicted that the Wedge-tailed Shearwater would reach California (Jehl 1980).

IDENTIFICATION SUMMARY

The Wedge-tailed Shearwater is most like Buller's Shearwater in shape and actions; Jouanin and Mougin (1979) considered the two to constitute the subgenus *Thyellodroma*, characterized by a long, graduated tail (Stejneger 1888). Both often fly low with wings angled forward, using graceful wing strokes or relaxed glides on bowed wings, quite unlike the energetic wingbeats and stiff wings of Pink-footed and Flesh-footed *P. carneipes* shearwaters. In all plumages the very long pointed tail, appearing wedge-shaped when fanned, distinguishes the Wedge-tailed from most similar species. Although many field guides de-emphasize this character, we believe it is critical in establishing a claim for this species outside its normal range. When a Wedge-tailed Shearwater sits on the water, its tail projects beyond its folded wings (Ridgely 1976). The broad bases to the wings also impart a distinctive shape.

In plumage, the light morph is similar to the Pink-footed Shearwater, as it lacks the striking back and head pattern of Buller's Shearwater. The underparts are also similar to the Pink-footed's, showing dark undertail coverts and broad dark trailing edges to the wings, unlike Buller's. Light-morph Wedge-taileds are rather variable in the extent of dark on the axillaries and underwing but average whiter there than most Pink-footeds. Wedge-taileds have a dark diagonal line extending from the axillars toward the wrist, forming the outline of a white triangle on the underwing coverts, though the pattern is less obvious on some birds. On all Pink-footeds these coverts are heavily streaked or mottled with brown, resulting in a darker overall pattern and no triangle effect.

The bill of the Wedge-tailed is variably gray with a slightly darker tip (Harrison 1983) or "reddish-flesh" (Alexander 1954) or pinkish (Ridgely 1976). We do not know how many birds have reddish or pinkish bills, but of the thousands of Wedge-tailed Shearwaters P. Unitt (pers. comm.) saw in the central and eastern Pacific, none had a pink bill. Specimens examined by Roberson at the American Museum of Natural History with original bill color noted were variously designated as slate, gray, blue-gray, and slate with pinkish tinge. Any individual with a gray bill is not a Pink-footed or Flesh-footed shearwater.

The dark morph of Wedge-tailed Shearwater could be confused with Flesh-footed, Sooty *P. griseus*, Short-tailed *P. tenuirostris*, or Christmas *P. nativitatis* shearwaters, but the former's very long pointed tail, angled wings, and buoyant flight should be diagnostic in reasonable views. Sooty and Short-tailed shearwaters are easily distinguished by their much paler underwings and very different shape and flight characteristics. The Christmas Shearwater resembles a small dark Wedge-tailed Shearwater but has a short tail and a slow, zig-zag

flight (Meeth and Meeth 1979). Harrison (1983) claimed that dark Wedge-taileds have solidly dark underwings while Flesh-footeds have paler undersides to the primaries, but no such difference is apparent in the photos published by Harrison (1987) nor have we noted it in the field. In reality, dark Wedge-taileds are highly variable. Birds of more southerly populations tend to be uniformly dark, while more northerly birds usually have the entire underparts paler neutral gray (Murphy 1951, King 1967). For convenience, we call the latter plumage the "gray morph." Gray birds intergrade with light birds in the North Pacific, although typical birds greatly outnumber intermediates in collections (Jehl and Parkes 1982). Morlan's examination of specimens at the California Academy of Sciences suggests that intermediate birds may be categorized into two basic types: a gray morph with a white throat and a light morph with a gray band across the breast.

Dark Wedge-tailed Shearwaters are most likely to be confused with the smaller, poorly known Jouanin's Petrel *Bulweria fallax* of the northern Indian Ocean. That species' range at sea is largely unknown, although it has been collected in Hawaii (Clapp 1971), and there is a specimen from Italy whose provenance is disputed (van den Berg 1987). Apparently Jouanin's Petrel was overlooked until first discovered in the Arabian Sea in 1955 because it was confused with Wedge-tailed Shearwater (Jouanin 1955, Gallagher and Woodcock 1980). It closely resembles dark Wedge-tailed Shearwaters in coloration and in its long pointed tail. It differs primarily in its smaller size, much shorter and thicker bill, which in flight is held downward at 45° (van den Berg 1987), and a faint pale area around the base of the bill (Harrison 1987).

The feet of the Wedge-tailed Shearwater are usually pink, but the outer toe and web and the outside of the tarsus are dark (Penny 1974). In the hand all Wedge-taileds, including unfeathered chicks, are said to be reliably distinguished from all similar species by their white toe-nails (Slater 1970). This fine point is unlikely to be of value in the field, but might help establish the identity of a decomposed corpse should one wash ashore.

ACKNOWLEDGMENTS

We thank CBRC members Jon L. Dunn, Jeri M. Langham, and Curtis Marantz for their helpful comments in reviewing this record, Stephen F. Bailey for assistance in examining specimens at the California Academy of Sciences, Mary LeCroy and the Frank F. Chapman Memorial Fund for assistance in examining the American Museum collection, and Alan Baldridge for data on water temperatures in Monterey Bay.

LITERATURE CITED

Alexander, W. 1954. Birds of the Ocean. Putnam, New York.

American Ornithologists' Union. 1983. Check-List of North American Birds. 6th ed. Am. Ornithol. Union, Washington, D.C.

Berger, A. 1981. Hawaiian Birdlife. 2nd ed. Univ. of Hawaii Press, Honolulu.

Bevier, L. In prep. Eleventh report of the California Bird Records Committee.

Blakers, M., Davies, S., and Reilly, P. 1984. The Atlas of Australian Birds. Melbourne Univ. Press, Carlton, Victoria.

Clapp, R. B. 1971. A specimen of Jouanin's Petrel from Lisianski Island, northwestern Hawaiian Islands. Condor 73:490.

Gallagher, M., and Woodcock, M. 1980. The Birds of Oman. Quartet, London.

Haley, D., ed. 1984. Seabirds of the Eastern North Pacific and Arctic Waters. Pacific Search Press, Seattle.

Harrison, P. 1983. Seabirds: An Identification Guide. Houghton Mifflin, Boston.

Harrison, P. 1987. A Field Guide to Seabirds of the World. Christopher Helm, London.

Jehl, J. R., Jr. 1980. Trends in the state list of California birds. W. Birds 11:103-109.

Jehl, J. R., Jr., and Parkes, K. C. 1982. The status of the avifauna of the Revillagigdo Islands, Mexico. Wilson Bull. 94:1-19.

Jouanin, C. 1955. Une nouvelle espèce de Procellariidae. Oiseau Revue Fr. Ornithol. 25:155-161.

Jouanin, C., and Mougin, J.-L. 1979. Procellariiformes, in Check-List of Birds of the World (E. Mayr and G. W. Cottrell, eds.), Vol. 1, pp. 48-121. Mus. Comp. Zool., Cambridge, MA.

King, W. B. 1967. Preliminary Smithsonian Identification Manual: Seabirds of the Tropical Pacific Ocean. U. S. Natl. Mus., Washington, D. C.

King, W. B. 1974. Wedge-tailed Shearwater (*Puffinus pacificus*), in Pelagic studies of seabirds in the central and eastern Pacific (W. B. King, ed.), pp. 53-95. Smithsonian Contr. Zool. 158.

Loomis, L. 1918. A review of the albatrosses, petrels and diving petrels. Proc. Calif. Acad. Sci., Ser. 4, 2:1-187.

Meeth, P., and Meeth, K., 1979. Seabird observations from six Pacific Ocean crossings. Sea Swallow 30:58-65.

Murphy, R. C. 1951. The populations of the Wedge-tailed Shearwater (*Puffinus pacificus*). Am. Mus. Nov. 1512:1-21.

Murphy, R. C. 1958. The vertebrates of "Scope" (November 7-December 16, 1956). U. S. Dept. Interior Spec. Sci. Rep.—Fisheries 279:101-111.

Ornithological Society of Japan. 1974. Check-list of Japanese Birds. 5th ed. Gakken, Tokyo.

Penny, M. 1974. The Birds of the Seychelles and the Outlying Islands. Collins, London.

Pitman, R. 1986. Atlas of Seabird Distribution and Relative Abundance in the Eastern Tropical Pacific. Admin. Rep. LJ-86-02C, U.S. Natl. Mar. Fish. Serv., Southwest Fisheries Center, La Jolla, CA.

Ridgely, R. 1976. A Guide to the Birds of Panama. Princeton Univ. Press, Princeton, NJ.

Scripps Institute of Oceanography. 1987. Surface Water Temperatures at Shore Stations, U.S. West Coast, 1986. SIO Ref. 87-11, Univ. of Calif., Scripps Inst. Oceanogr., La Jolla, CA.

Shirihai, H. 1987. Shearwaters and other tubenoses at Eilat. Dutch Birding 9:152-157.

Sinclair, J. 1978. Sight records of the Wedge-tailed Shearwater off southern Africa. Ostrich 49:46.

Slater, P. 1970. A Field Guide to Australian Birds. Vol 1, Non-passerines. Rigby, Adelaide.

Stejneger, L. 1888. Further contributions to the Hawaiian avifauna. Proc. U. S. Natl. Mus. 11:93-103.

van den Berg, A. B. 1987. Jouanin's Petrel. Dutch Birding 9:72-73.

Accepted 28 May 1988

THE ABUNDANCE AND MIGRATION OF SHOREBIRDS AT TWO PUGET SOUND ESTUARIES

JOSEPH B. BUCHANAN, Cascadia Research Collective, 218½ W. Fourth Avenue, Olympia, Washington 98501

The timing and magnitude of shorebird migration has been documented at several areas along the Pacific coast of North America, primarily California (Recher 1966, Page et al. 1979) and Washington (Widrig 1979, Herman and Bulger 1981). Few studies in this region have been conducted away from the outer coast. In Washington, only Van Velzen (1973) has described shorebird migration at noncoastal sites. Because of the dearth of information on shorebird abundance and migration in this region (but see seasonal summaries in *American Birds*), I here provide information on the year-round abundance and migration timing of shorebirds at two small estuaries in the south Puget Sound of western Washington.

STUDY AREA AND METHODS

The two study sites, Eld Inlet and Totten Inlet (Kennedy Creek delta), are adjacent inlets 7 km apart at the south end of Puget Sound in western Washington (Figure 1). Both inlets are relatively small, having tidal flats of ca. 600 ha exposed at Mean Lower Low Water. A small salt marsh (ca. 3 ha) is present at Totten Inlet, but salt marsh is virtually absent at Eld Inlet, where the largest contiguous salt marsh covers only 30 m^2. The tidal flats at Eld Inlet are deeply cut by distributary and creek channels, whereas the tidal flats at Totten Inlet exhibit less relief. Whether this difference produces differences in the mobility of sediment or in the stratification of grain sizes sufficient to influence the distribution and abundance of invertebrates is unknown (see Ferns 1983, Hicklin and Smith 1984). Brennan et al. (1985) and Buchanan (in press) described the sites further.

I visited Eld Inlet on 293 days between July 1980 and March 1983, Totten Inlet on 196 days between April 1980 and March 1988. A summary of my field effort at each site is presented in Table 1. Shorebirds were counted immediately before or after roosting periods, increasing the likelihood of accurate counts. When shorebirds were abundant (>1000 birds), their numbers were estimated by hundreds; otherwise, birds were estimated by tens or counted individually.

SPECIES ACCOUNTS

Black-bellied Plover (*Pluvialis squatarola*). This species was noted only twice at Eld Inlet (Table 2). It was common at Totten Inlet (Table 3), where populations each winter remained fairly stable, although there was considerable variation in numbers from year to year (Table 4; see Discussion below). Spring migrants began to arrive in the third week of March, and the peak of spring passage occurred late in April. Small numbers of birds were occasionally observed during summer; birds in winter plumage present in

June and early July presumably spent the summer south of the breeding grounds (see Loftin 1962). There was no distinct peak in the fall migration, and numbers in fall were never higher than the eventual winter population. Widrig (1979), reporting on shorebird migration at Leadbetter Point on the outer coast of Washington, noted a distinct peak in autumn migration (early August) but not in spring migration. Similarly, Herman and Bulger (1981) did not detect any peaks between 25 April and 14 May at Grays Harbor, Washington.

Semipalmated Plover (*Charadrius semipalmatus*). This was an uncommon species at the two study sites, neither of which has the sandy tide flats this species seems to prefer. Spring migrants were noted between 26 April and 13 May. Autumn migration spanned the period 18 July through 13 September.

Killdeer (*C. vociferus*). This locally nesting species was recorded in all months. The high number of birds recorded in late summer at both sites

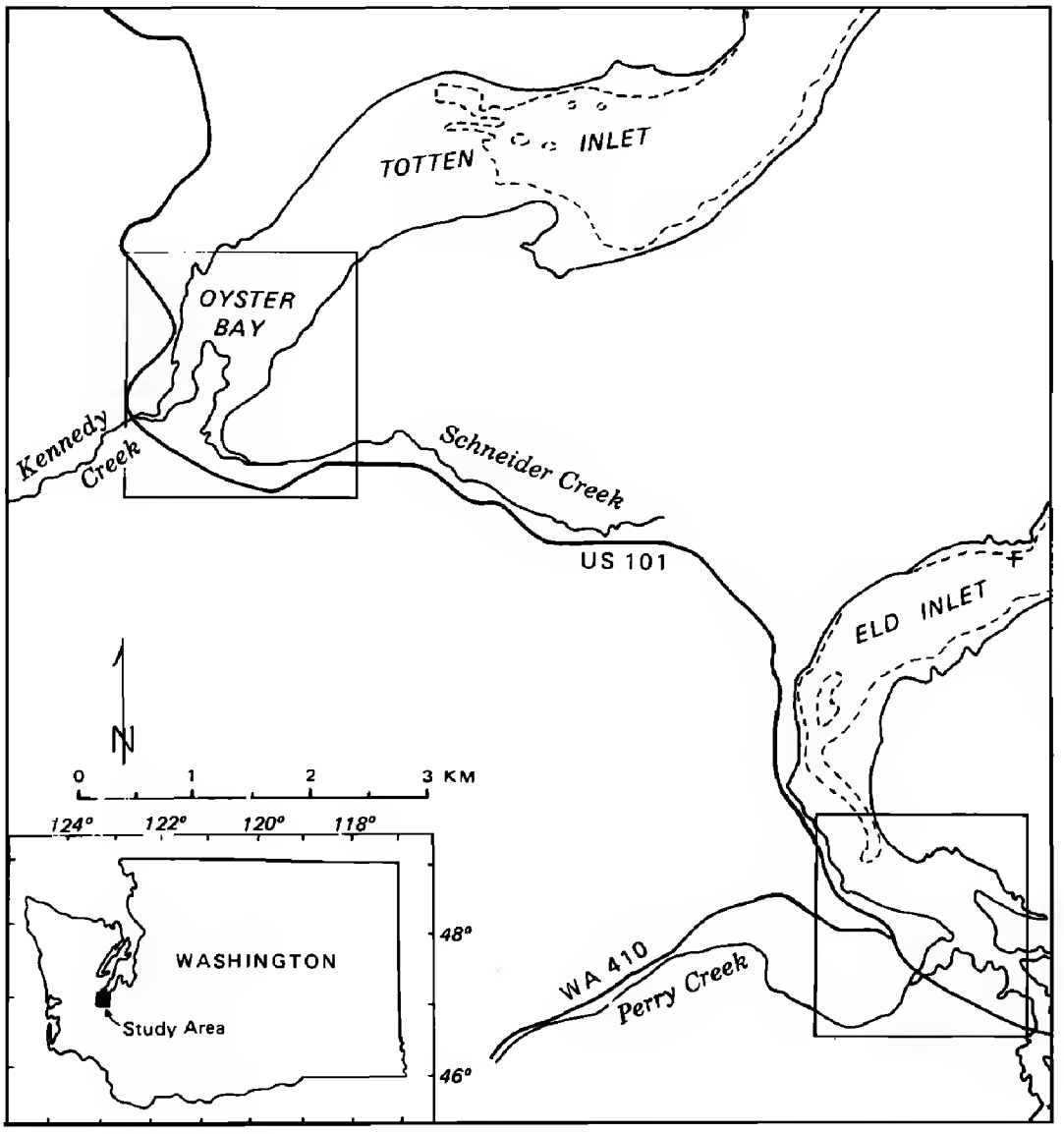


Figure 1. Location of the two study sites in western Washington.

reflected the presence of large numbers of juveniles. I noted little evidence of spring migration at either site; however, fall migration peaked in October.

American Avocet (*Recurvirostra americana*). On 24 August 1981 a male (sex determination based on bill shape; see Prater et al. 1977) still showing a tinge of rust on its head and neck was observed at Eld Inlet. This was probably the same bird observed at Totten Inlet on 3 September 1981 (M. Finger pers. comm.). This species is rare in western Washington.

Greater Yellowlegs (*Tringa melanoleuca*). This species was common and conspicuous in autumn, winter, and spring at both sites. Peaks in both spring and autumn migration were noted, with peak numbers occurring in April and September (see Buchanan in press). Individuals occasionally seen during June presumably spent the summer months south of the breeding grounds. Winter populations varied from year to year (Table 4).

Lesser Yellowlegs (*T. flavipes*). This species was rarely encountered, and all records except one are from autumn. The single spring sighting was of an individual at Eld Inlet on 11 April 1981. At Eld Inlet a single bird was observed on 3 August 1981, and I saw up to 4 birds in late September 1980. Two birds were present from 14 August to 13 September in 1986 at Totten Inlet.

Spotted Sandpiper (*Actitis macularia*). Seen in all months except June at Eld Inlet, where it was uncommon but regular; rarely seen at Totten Inlet between May and November. No distinct migratory peaks were noted, although the species was most common from September through January at Eld Inlet. The Spotted Sandpiper nests in western Washington (Jewett et al. 1953).

Whimbrel (*Numenius phaeopus*). A single bird observed on 21 May 1982 on oyster beds at Eld Inlet was the only one recorded during this study. This species is uncommon in south Puget Sound.

Ruddy Turnstone (*Arenaria interpres*). Three birds on 6 May and one on 9 May 1987 at Totten Inlet are this study's only records and apparently the first of this species west of Tacoma in south Puget Sound (W. Tweit pers. comm.).

Western Sandpiper (*Calidris mauri*). An uncommon winter resident and abundant migrant at Totten Inlet (see Tables 3 and 4). It was absent during two of three winters at Eld Inlet. The peak of spring migration occurred late in

Table 1 Average Number of Visits Each Month to Eld Inlet, 1980-1983, and to Totten Inlet, 1980-1988

Month	Eld Inlet	Totten Inlet	Month	Eld Inlet	Totten Inlet
Jan	8.3	2.8	Jul	9.0	2.0
Feb	7.7	2.5	Aug	9.3	2.3
Mar	12.7	3.0	Sep	8.0	1.5
Apr	13.0	3.4	Oct	6.7	1.5
May	7.0	1.4	Nov	11.7	1.8
Jun	2.5	1.0	Dec	9.3	1.5

Table 2 Maximum Monthly Counts of Shorebirds at Eld Inlet, Washington, 1980-1983

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Black-bellied Plover				1							2	
Semipalmated Plover					4		2	3				
Killdeer	7	5	3	4	1	3	6	10	11	16	2	7
American Avocet								1				
Greater Yellowlegs	32	35	35	39	3	2	14	24	38	28	27	19
Lesser Yéllowlegs				1				1	4			
Spotted Sandpiper	5	1	2	2	2		2	2	4	5	4	5
Whimbrel					1							
Western Sandpiper	25	10	4	400	364		62	510	415	51	100	5
Least Sandpiper				9			11	30				
Dunlin	1230	1500	1500	1500	766					540	2100	1200
Stilt Sandpiper										1		
Short-billed Dowitcher				3								
Common Snipe										1		
Red-necked Phalarope					7							
Red Phalarope										2		

Table 3 Maximum Monthly Counts of Shorebirds at Totten Inlet, Washington, 1980-1988

Species	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Black-bellied Plover	98	104	132	185	66	2	15	34	38	57	68	94
Semipalmated Plover				5	1		5	5	2			
Killdeer	10	6	3	4	2	18	35	23	15	31	9	7
American Avocet								1				
Greater Yellowlegs	25	13	19	43	5	4	9	18	17	17	20	22
Lesser Yellowlegs								2	2			
Spotted Sandpiper					1	1	4	2	1		1	
Ruddy Turnstone					3							
Western Sandpiper	145	120	150	6600	2600		87	1910	1750	305	200	200
Least Sandpiper				4	12		14	35	20			
Dunlin	4400	4400	4500	5100	1400					1050	3800	4130
Short-billed Dowitcher				50	6							
Long-billed Dowitcher	1		2				10	9	2	1	1	1
Common Snipe										2		2
Red-necked Phalarope					32			6				

April and was brief; I have no records after 13 May. This pattern of abundance during spring in Washington has been noted by others (Van Velzen 1973, Widrig 1979, Herman and Bulger 1981). My earliest record for autumn migrants was on 2 July 1986. Autumn migration typically exhibited two peaks, the first in mid to late August and the second in mid to late September. This is similar to the pattern noted by Widrig (1979), although at Leadbetter Point, Widrig observed a substantial peak of postbreeding adults in late June and early July. Most fall migrants in Puget Sound are juveniles. In south Puget Sound the autumn migration of Western Sandpipers occurs during a period of relatively low diurnal low tides and is largely completed one month before the first large flocks of Dunlins arrive. This migration timing is probably dictated largely by differing breeding schedules and seasonal availability of prey in the Arctic (Holmes 1972), although the availability of habitat and prey during migration (Schneider and Harrington 1981) and reduced competition with other sandpipers (Recher 1966) have been suggested as timing mechanisms.

Least Sandpiper (*C. minutilla*). This species was more common in autumn than in spring and appeared to be slightly more common at Totten Inlet. Spring migrants were observed between 24 April and 7 May, while autumn migration spanned a much greater period (6 July-22 September).

Dunlin (*C. alpina*). Except during early fall and briefly in spring, this was the most abundant species at both study sites. During winter this species constituted >95% of all shorebirds, regardless of the yearly variation in its population (Table 4; see Discussion below). Populations generally fluctuated very little within a single winter. If a gradual northward movement of birds from California occurs during winter, as suggested by Holmes (1966) and Widrig (1979), it is not evident in south Puget Sound until after mid-March.

Table 4 Yearly variation in Peak Winter[a] Counts of Black-bellied Plovers, Greater Yellowlegs, Western Sandpipers, and Dunlins at Totten Inlet, 1980-1988

	Black-bellied Plover	Greater Yellowlegs	Western Sandpiper	Dunlin
1980-81	68	16	132	2400
1981-82	65	12	100	4100
1982-83	67	19	87	2450
1983-84	68	7	50	2030
1984-85	104	13	110	4400
1985-86	103	8	8	2550
1986-87	99	15	120	2650
1987-88	102	19	180	4130
c.v. (%)[b]	22.2	33.2	53.0	30.7

[a]December, January, February.

[b]Coefficient of variation = standard deviation/mean.

Table 5 Comparison of Species Richness at Eld Inlet, Totten Inlet, and Leadbetter Point[a]

Month	Eld Inlet	Totten Inlet	Leadbetter Point
Jan	5	6	8
Feb	5	5	8
Mar	5	6	10
Apr	9	8	19
May	8	11	22
Jun	2	4	16
Jul	6	8	20
Aug	8	11	26
Sep	5	9	27
Oct	8	8	17
Nov	6	7	11
Dec	5	7	10

[a]From Widrig (1979).

The peak of spring migration occurred late in April in all years, and passage was completed by 8 May. This timing has been documented by others (Van Velzen 1973, Widrig 1979, Herman and Bulger 1981). A protracted southward movement of juveniles on the outer coast during November has been hypothesized (Buchanan et al. 1986). A brief passage of up to 2100 birds during November 1982 at Eld Inlet suggests an occasional late autumn movement through Puget Sound. The earliest autumn migrants were observed on 17 October in 1982 and 1983. This is in contrast to arrival dates at Leadbetter Point, where Widrig (1979) recorded this species throughout summer and early fall; however, the timing at my study sites coincides with the arrival of the first large Dunlin flocks at Leadbetter Point.

Stilt Sandpiper (*Micropalama himantopus*). A juvenile was observed at Eld Inlet on 6 October 1980, for the only record during this study. This species is rare in western Washington.

Short-billed Dowitcher (*Limnodromus griseus*). Because of the problems in distinguishing between *L. griseus* and *L. scolopaceus* in the field (see Wilds and Newlon 1983), the information presented here is restricted to birds identified by their call notes. This species was detected only during spring migration (12 April-9 May), and, after the departure of a few *L. scolopaceus*, which occasionally wintered locally, this was the only dowitcher present during the peak of spring migration.

Long-billed Dowitcher (*L. scolopaceus*). This was the only dowitcher species identified during autumn (11 July-8 October) or winter (Table 2). These findings are much different from those reported from the outer coast by Widrig (1979), who found that both dowitcher species were common during spring and autumn migrations but that this species was not present in autumn until early September.

Common Snipe (*Gallinago gallinago*). I saw this species only once at Eld Inlet, on 21 October 1980. I observed it during October and December at Totten Inlet but never later, probably because it is shot by waterfowl hunters, whose season begins in October.

Red-necked Phalarope (*Phalaropus lobatus*). This species was recorded three times: 32 on 7 May 1982 at Totten Inlet, 7 on 8 May 1982 at Eld Inlet, and 6 on 18 August 1985 at Totten Inlet.

Red Phalarope (*P. fulicaria*). Two birds were present at Eld Inlet 27-30 October 1982. This species was recorded from several other interior localities in Washington and Oregon in fall 1982 (Hunn and Mattocks 1983).

DISCUSSION

Eighteen species were observed during this study (Tables 2 and 3). At least 12 other species [Lesser Golden-Plover (*Pluvialis dominica*), Black-necked Stilt (*Himantopus mexicanus*), Solitary Sandpiper (*Tringa solitaria*), Black Turnstone (*Arenaria melanocephala*), Red Knot (*Calidris canutus*), Sanderling (*C. alba*), Semipalmated Sandpiper (*C. pusilla*), Baird's Sandpiper (*C. bairdii*), Pectoral Sandpiper (*C. melanotos*), Sharp-tailed Sandpiper (*C. acuminata*), Buff-breasted Sandpiper (*Tryngites subruficollis*), and Wilson's Phalarope (*Phalaropus tricolor*)] have been recorded from southern Puget Sound (W. Tweit pers. comm.), but they are either rare or use habitats not found at my study sites. Because I did not observe these species during my study I will not consider them further.

Sixteen species were observed at Eld Inlet during the study period, while 15 species were observed at Totten Inlet. Spring and autumn were the periods of highest cumulative species richness. I regularly saw between 5 and 7 species during winter (Tables 2 and 3). This pattern of species richness is similar to that noted by Widrig (1979) at Leadbetter Point (Table 5), although I recorded a much lower diversity and abundance during all months at my sites. In addition to the slight seasonal differences in species richness at my two sites, there were distinct differences in species composition.

Black-bellied Plovers and dowitchers were regularly encountered at Totten Inlet but were rare at Eld Inlet (two and one records, respectively). Least Sandpipers were observed less often and in fewer months at Eld Inlet than at Totten Inlet, probably because salt marsh, a preferred habitat, is virtually absent at Eld Inlet. Dunlins and Western Sandpipers were far less common at Eld Inlet. These differences in abundance may be related to differences in prey availability (Goss-Custard 1970, O'Connor and Brown 1977, Evans and Dugan 1984).

The four most abundant species at Totten Inlet during winter were the Black-bellied Plover, Greater Yellowlegs, Dunlin, and Western Sandpiper. In the 8 winters of this study, these species varied considerably in numbers from year to year (Table 4). The degree of variation, as indicated by values of the coefficient of variation, was similar for three species (a temporary influx of 19 Greater Yellowlegs in mid-winter 1982-1983, which increased the site's population from 19 to 38, is not included in Table 4 because these birds remained for only a short period; see Buchanan in press). Yearly variation in each species was clearly independent of the abundance of other species.

These findings are similar to those reported by Page et al. (1979), who, in a 5-year study in California, found considerable variation in winter populations of these species. The patterns of variation in winter abundance exhibited by Black-bellied Plovers and Dunlins appear cyclical. It is unknown whether these fluctuations at Totten Inlet reflect fluctuations in breeding success, postbreeding survival rates, or the carrying capacity of the site. Summers et al. (1987) presented evidence that cyclic variations in the abundance of first-year Sanderlings in southern Africa result from cyclic variations in predation pressures in arctic nesting areas. Changes in the abundance of Dunlins wintering at Eld Inlet (580 birds in 1980-81, 1230 in 1981-82, and 220 in 1982-83) were similar to those at Totten Inlet, indicating that variables away from the wintering grounds (e. g., breeding success or survival rates) may influence this species' annual pattern of abundance.

The results of this study illustrate variation in shorebird abundance from year to year and between sites, and they indicate the need for and the importance of long-term studies. Also, because of between-site differences, studies of shorebirds should include several areas or subareas (e. g., Page et al. 1979, Herman and Bulger 1981) to provide a more complete understanding of local populations and habitat use.

ACKNOWLEDGMENTS

I thank Leonard A. Brennan, Anna M. Cahall, Michael A. Finger, Steven G. Herman, Tod M. Johnson, Lori J. Salzer, and Charles T. Schick for assistance in the field. Dennis R. Paulson, William M. Tweit, and Philip Unitt provided valuable advice and editorial comments. Funding during 1980 and 1981 was provided in part by NSF-SOS Grant SPI80-04760.

LITERATURE CITED

American Ornithologists' Union. 1983. Check-list of North American Birds. 6th. ed. Am. Ornithol. Union, Lawrence, KS.

Brennan, L.A., Buchanan, J.B., Herman, S.G., and Johnson, T.M. 1985. Interhabitat movements of wintering Dunlins in Western Washington. Murrelet 66:11-16.

Buchanan, J. B. In press. Migration and winter populations of Greater Yellowlegs *Tringa melanoleuca* in western Washington. Can. Field-Nat.

Buchanan, J. B., Brennan, L. A., Schick, C. T., Herman, S. G., and Johnson, T. M. 1986. Age and sex composition of wintering Dunlin *Calidris alpina* populations in western Washington. Wader Study Group Bull. 46:37-41.

Evans, P. R., and Dugan, P. J. 1984. Coastal birds: Numbers in relation to food resources, in Coastal Waders and Wildfowl in Winter (P. R. Evans, J. D. Goss-Custard, and W. G. Hale, eds.), pp. 8-28. Cambridge Univ. Press, Cambridge, England.

Ferns, P. N. 1983. Sediment mobility in the Severn Estuary and its influence upon the distribution of shorebirds. Can. J. Fish. Aquat. Sci. 40 (Suppl. 1):331-340.

Goss-Custard, J. D. 1970. The responses of Redshank *Tringa totanus* to spatial variations in the density of their prey. J. Anim. Ecol. 39:91-114.

Herman, S. G., and Bulger, J. B. 1981. The distribution and abundance of shorebirds during the 1981 spring migration at Grays Harbor, Washington. Contract report DACW67-81-M0396. U. S. Army Corps of Engineers, P. O. Box C-3755, Seattle, WA 98124.

Hicklin, P.W., and Smith, P.C. 1984. Selection of foraging sites and invertebrate prey by migrant Semipalmated Sandpipers *Calidris pusilla* in Minas Basin, Bay of Fundy. Can. J. Zool. 62:2201-2210.

Holmes, R. T. 1966. Breeding ecology and annual cycle adaptations of the Red-backed Sandpiper *Calidris alpina* in northern Alaska. Condor 68:3-46.

Holmes, R. T. 1972. Ecological factors influencing the breeding season schedule of Western Sandpipers (*Calidris mauri*) in subarctic Alaska. Am. Midland Nat. 87:472-491.

Hunn, E. S., and Mattocks, P. W., Jr. 1983. The autumn migration. Northern Pacific coast region. Am. Birds 37:214-218.

Jewett, S. G., Taylor, W. P., Shaw, W. T., and Aldrich, J. W. 1953. Birds of Washington State. Univ. of Wash. Press, Seattle.

Loftin, H. 1962. A study of boreal shorebirds summering on Apalachee Bay, Florida. Bird-Banding 33:21-42.

O'Connor, R. J., and Brown, R. A. 1977. Prey depletion and foraging strategy in the Oystercatcher *Haematopus ostralegus*. Oecologia 27:75-92.

Page, G. W., Stenzel, L. E., and Wolfe, C. M. 1979. Aspects of the occurrence of shorebirds on a central California estuary. Studies Avian Biol. 2:15-32.

Prater, A. J., Marchant, J. H., and Vuorinen, J. 1977. Guide to the Identification and Ageing of Holarctic Waters. Guide 17. British Trust for Ornithology, Tring.

Recher, H. F. 1966. Some aspects of the ecology of migrant shorebirds. Ecology 47:393-407.

Summers, R. W., Underhill, L. G., Waltner, M., and Whitelaw, D. A. 1987. Populations, biometrics and movements of the Sanderling *Calidris alba* in southern Africa. Ostrich 58:24-39.

Van Velzen, A. C. 1973. Seasonal fluctuations of sandpipers in western Washington. Murrelet 54: 1-3.

Widrig, R. S. 1979. The Shorebirds of Leadbetter Point. R. S. Widrig, P. O. Box 43, Ocean Park, WA 98640.

Wilds, C., and Newlon, M. 1983. The identification of dowitchers. Birding 15:151-166.

Accepted 29 June 1988

NOTES

FOODS FOUND IN 103 RED-NECKED PHALAROPES

PATTI POWERS BROWN, 560 Wolf Creek, Bigfork, Montana 59911
STANLEY W. HARRIS, Department of Wildlife, Humboldt State University, Arcata, California 95521

The Red-necked Phalarope (*Phalaropus lobatus*) is a common spring migrant along the northern California coast (Yocom and Harris 1975), where it commonly feeds along drift lines at sea and on sheltered coastal waters such as sewage oxidation ponds (Gerstenberg 1979) and rainwater ponds in coastal woodlands and fields. On 6 May 1969, 103 dead Red-necked Phalaropes were recovered at Trinidad, Humboldt County, California, where they had struck power lines stretched between the shoreline and a coastal headland. The gizzards of these birds were stored in formalin until they could be examined. Food items were identified by means of Borror and Delong (1976), Barnes (1974), and reference collections. We are grateful to Dr. R. L. Hurley for helping to identify unknown samples.

Nearly 90% of the total gizzard contents consisted of animal remains, mostly carpenter ants (*Campanotus* sp.) (47%), larvae of the cancer crab (*Cancer* sp.) (21%), and beetles (18.5%) (Table 1). Sixty of the gizzards contained only terrestrial insects, 11 contained only marine organisms, and 32 contained both freshwater and marine forms, showing that many birds had fed in both fresh and salt or estuarine waters. Thirty-eight of the 103 gizzards were densely packed with ant fragments, including wings, suggesting that the phalaropes had fed on emerging or mating adult ants. Because of the high concentration of carpenter ants and bark beetles in this sample, it seems likely that this flock had fed together in a coastal woodland pond or in a pond containing woody debris.

Table 1 Foods of 103 Red-necked Phalaropes, Trinidad, Humboldt Co., California, 6 May 1969

Item		Percent of total volume	Percent frequency
Insects			
Formicidae	Ants	47.0	63
Scolytidae	Bark beetles	12.9	74
Carabidae	Ground beetles	5.4	37
Elateridae	Click beetles	0.2	7
Other	(Eight families)	trace	30
Crustacea			
Canceridae	Crab larvae	21.0	36
Amphipods	(Two families)	trace	3
Arachnida			
Arthropodidae		trace	2
Unidentified animal ramains		3.4	42
Total animal remains		89.9	
Seeds		6.6	16
Rocks		3.5	9

Previous workers have emphasized the importance of insects, crustaceans, and mollusks in phalarope diets (Wetmore 1925, Bent, 1927, Michael 1938, Stout 1967, Baker 1977, Jehl 1986). Although most phalarope foods are probably picked from the surface, Red-necked and Wilson's (*Phalaropus tricolor*) phalaropes have been observed rising several feet above the water in pursuit of flying insects (Bent 1927, Michael 1938). Wetmore (1925) found hymenopterans in 12 of 155 phalarope stomachs and thought that they were taken by chance, although it is generally thought that formic acid may make ants unpalatable to birds. Brooks (1967) reported ants in Lesser Golden Plovers (*Pluvialis dominica*), Least Sandpipers (*Calidris minutilla*), and Wilson's Phalaropes. He concluded the ants taken by shorebirds probably represented insects living on shoreline vegetation or individuals that become trapped on the pond surface. Our samples suggest that phalaropes will take foods opportunistically.

LITERATURE CITED

Baker, M. C. 1977. Shorebird food habits in the eastern Canadian Arctic. Condor 79:56-62.

Barnes, R. D. 1974. Invertebrate Zoology. 3rd ed. Saunders, Philadelphia.

Bent A. C. 1927. Life histories of North American shorebirds. U.S. Natl. Mus. Bull. 142:15-28.

Borror, D. J., and Delong, D. M. 1976. An Introduction to the Study of Insects. 4th ed. Holt, Rinehart, Winston, New York.

Brooks, W. 1967. Organisms consumed by various migrating shorebirds. Auk 84:128-130.

Gerstenberg, R. H. 1979. Habitat utilization by wintering and migrating shorebirds on Humboldt Bay, California. Studies Avian Biol. 2:33-40.

Jehl, J. R., Jr. 1986. Biology of Red-necked Phalaropes (*Phalaropus lobatus*) at the western edge of the Great Basin in fall migration. Great Basin Nat. 46:185-197.

Michael, C. W. 1938. Behavior of Northern Phalaropes. Condor 40:85.

Stout, G. 1967. The Shorebirds of North America. Viking, New York.

Wetmore, A. 1925. Food of American phalaropes, avocets and stilts. U.S. Dept. Agric. Bull. 1359:1-20.

Yocom, C. F., and Harris, S. W. 1975. Status, Habitats and Distribution of Birds of Northwestern California. Humboldt State Univ. Bookstore, Arcata, CA.

Accepted 20 May 1988

FIRST RECORD OF THE WESTERN GULL FROM IDAHO

MICHAEL H. TOVE, 303 Dunhagen Place, Cary, North Carolina 27511

CHARLES H. TROST, Department of Biology, Idaho State University, Pocatello, Idaho 83209

On 21 October 1984 we observed a Western Gull (*Larus occidentalis*) in third-winter plumage at the north shore of American Falls Reservoir, Idaho. The bird was subsequently seen there to at least 27 October. First observed in flight with about 300 Ring-billed Gulls (*L. delawarensis*), the bird was distinctly larger and darker mantled than any other gull present. From 1530 to 1630, we followed the bird as it moved from its initial location west to a boat mooring strip made of automobile tires. At this location, we were able to attract it by throwing bread toward it and other gulls, enabling us to study the bird carefully at very close range.

The bill was noticeably stout, especially in the region of the gonydeal bulge, which was greater than twice as wide as the eye. The bill was tricolored, with a yellow tip, blackish middle, and pinkish gape and base. The feet were bright flesh-pink, and the eye was yellowish. The head, neck, and upper chest were smudged with sooty gray to grayish brown, and the lower parts were mostly white. The dark slate-gray mantle contrasted with the black primaries. The tail was black and contrasted sharply with the white upper tail coverts (Figure 1). Behaviorally, the bird clearly dominated all other gulls present. In fact, its aggressive nature was such that it never took bread from the water but rather harassed the other gulls as would a jaeger (*Stercorarius*).

Figure 1. Third-winter Western Gull at American Falls Reservoir, Idaho, 21 October 1984. Note the black tail, which contrasts with the white upper tail coverts, the dark upper wing surface, and the stout bill.

Photo by Michael H. Tove

The Western Gull is a member of a complex group of closely related larids of the west coast of North America. Included in this complex are two races of Western Gull (*L. o. occidentalis* and *L. o. wymani*), the Glaucous-winged Gull (*L. glaucescens*), their hybrids (*L. o. occidentalis* × *L. glaucescens*), and the Yellow-footed Gull (*L. livens*) (W. Hoffman et al., Auk 95:441-458, 1978; P. Harrison, Seabirds: An Identification Guide, Croom Helm, England, 1983). Although distinguishing among these forms can be tricky, we believe our bird to have been of the nominate (northern) race of the Western Gull (*L. o. occidentalis*). The combination of coal-black tail and primaries and pink feet eliminates all possibilities except the two races of the Western Gull. The slate-gray mantle, darker than that of a California Gull (*L. californicus*) but paler than that of a Lesser Black-backed Gull (*L. fuscus graellsii*), suggests the northern race.

This sighting constitutes a first record from Idaho. Ordinarily, such a sighting might be passed off as an anomaly. However, American Falls Reservoir appears to act as a magnet for larids that have wandered or been blown off course. For example, on the previous day (20 October), Trost saw an adult Sabine's Gull (*Xema sabini*) in breeding plumage. Moreover, this location is the first location in Idaho where Thayer's Gulls (*L. thayeri*) appear to be regular, if not uncommon (M. H. Tove, W. Birds 16:147-150, 1986). We believe that the combination of a large lake oriented north-south and major river system (Snake River) oriented east-west provides an effective migrant trap for these birds. Notably, this sighting was only 3 days after the passage of the most severe storm system of the season to date. However, many questions remain unanswered. For example, do these birds reorient on the lake and then follow the rivers (Snake to Columbia) back to the coast or do they drift south after the lake freezes? How many other similar concentration points for gulls exist and how many of these "accidental" species are in fact regular? Gull-watchers on both coasts have witnessed tremendous range expansions in some "rare" gull species. We believe that careful scrutiny of large gull flocks in the intermountain West will result in discoveries of a similar magnitude.

Accepted 16 August 1985

BOOK REVIEW

WILLIAM T. EVERETT, Department of Birds and Mammals, San Diego Natural History Museum, P.O. Box 1390, San Diego, California 92112

Birds of Baja California. Sanford R. Wilbur. 1987. University of California Press, Berkeley and Los Angeles, California. ix + 253 pp., 1 black and white plate, 12 black and white photographs. Price: $40.00 hardcover.

Baja California, Mexico, is the world's second longest peninsula—over 1200 kilometers long and bounded on the west by the Pacific Ocean and on the east by the Sea of Cortez. Numerous islands dot both coasts, and generally the climate and vegetation types are arid. For the most part, the avifauna is similar to that of the Mediterranean, desert, and montane areas to the north in southern California. Because of the peninsula's isolation, perhaps the most striking feature of the bird life of Baja California is its general lack of differentiation at the species level from that of the nearby mainland.

Any isolated landmass, however, attracts the curious. For the peninsula, ornithological investigation began in earnest in 1858 with John Xantus' arrival at Cabo San Lucas and continued at a steady pace until the mid 1920s. By this time many parts of Baja California had been carefully explored, and all information to date was critically reviewed and presented in Joseph Grinnell's benchmark 1928 work *A Distributional Summation of the Ornithology of Lower California* (Univ. Calif. Publ. Zool. 32:1-300). So thorough and complete was Grinnell's effort that it is still the starting point (and in many cases also the last word) in any study of bird distribution in the region. For the next four decades bird study proceeded slowly, until 1973 when the completion of the transpeninsular highway provided easier access to the interior and the Sea of Cortez and the emergence of the whale-watching industry allowed many observers to visit the islands and large lagoons of the west coast by boat. Since then there has been an upsurge of interest and a steady increase in the amount of information being gathered on bird status and distribution in Baja California.

Birds of Baja California has resulted from this amassing of recent data. The book begins with a brief overview of the peninsula's cultural and geographic setting, describing its various faunal districts and life zones. No new information is presented here, but it is helpful for those unfamiliar with the region. I was pleased to see a section devoted to conservation efforts and needs, but I wished there had been greater depth of discussion on the status of the more sensitive species and ecosystems. This is important in light of the increasing pressure brought by the rapid expansion of Mexico's human population and the resulting national and international demands on the region's marine and terrestrial resources.

The major portion of the book is an annotated list detailing the known status and distribution of the approximately 400 species of birds occurring in the Mexican states of Baja California Norte and Baja California Sur, in adjacent waters, and on nearby islands (including some records from Isla Guadalupe to the west but not including the Revillagigedo Islands to the south). Each account includes a Mexican bird name, derived from Birkenstein and Tomlinson, but unfortunately the complete citation of this important and useful reference (Native Names of Mexican Birds, U.S. Dept. of the Interior, Fish and Wildlife Service Resource Publication 139, 1981) was omitted. Each species account also includes a list of the subspecies (if any) known from Baja California. These lists seem to have been copied directly from the 1957 A.O.U. Check-list, as they give no evidence of research on subspecies since then, for example, Short and Crossin's discrediting of the supposed northern Baja California race of Acorn Woodpecker, *Melanerpes formicivorus "martirensis."* Wilbur cites their paper in several other instances but evidently ignored in it the new information on subspecies. Especially because many Baja California races differ strikingly from mainland forms (e. g., in the Ladder-backed Woodpecker, Cactus Wren, and Yellow-eyed Junco) it is a shame that subspecies are treated so superficially. After the annotated list we

are given a hypothetical list, a "selected" bibliography, a list of place names with corresponding map references, and a check-list of common names.

Ornithologists who work in Baja California and are familiar with Grinnell's work will wonder what this book provides that Grinnell did not. Although as many as 61 more species have been recorded since 1928, most have already been reported elsewhere in the literature. Only 21 species new to the region (by my count) are reported in print for the first time here, and apparently only one of these observations (Bronzed Cowbird) is the author's. These records are not identified as such in the book; Wilbur also gives no indication of whether he realized that many of his records constitute remarkable range extensions. For the most part, Wilbur's book is a re-presentation of published information from Grinnell and others, embellished with sight records from the field notes of the author and a number of other observers who were contacted and submitted their data. Unfortunately, the search for knowledgeable observers was not as thorough as it could have been.

Since no supporting documentation is presented, the reader is expected to accept Wilbur's critical review of the validity of many of these sight records. To a certain extent this limits the usefulness of this book, for even though observers' names and initials are given, chasing down addresses and obtaining details of specific sight records could be a time-consuming and frustrating process. The long-term scientific value of this work could have been greatly enhanced by having the supporting data on file and available at an appropriate institution. My suspicions regarding the overall credibility of the data were aroused when the first species account I looked at (Black-vented Shearwater) contained an error: the species is reported as breeding on Isla Cedros on the basis of a literature citation and the observations of one of the contributors. Upon further investigation I found that the paper in question made no mention of breeding, and when I contacted the individual whose observations were cited he informed me that he had reported only seeing the species "near" the island. Another mistake is in the account of Lucy's Warbler. Jehl may have seen the species at the San Benito Islands, but not in 1960, which was years before he started his work in the region. Beyond such prima facie errors, some of the reported sightings are so outlandish that they cast a shadow over the other, possibly valid, records. Xantus' Hummingbirds are most certainly not "common" at San Telmo, over 400 kilometers north of their normal range. Bendire's Thrashers are occasional vagrants to coastal southern Alta California, so a record or two from Baja California should not be too surprising. But "irregularly seen" between San Felipe and Puertecitos and six on Isla Cedros strain credibility, especially because Wilbur conveys no inkling that either he or the observers knew the species was unrecorded in Baja California. One could devise a continuum of believability of Wilbur's records, passing from these reports through such things as Water Pipits in the Sierra San Pedro Martir on 3 August to plausible range extensions such as Brown Creepers in those same mountains (that species had not been reported previously south of the Laguna Mountains of San Diego County). By indiscriminately mixing the wheat and the chaff Wilbur has obscured, not elucidated, the distribution of many Baja California birds.

I am also disappointed by a lack of consistency in the manner in which previously published records are cited. In some cases (e.g., Red-tailed Tropicbird and Mountain Bluebird) Wilbur cites Grinnell, even though his bibliography contains the original references to the specific records in question. Other records (e.g., Cinnamon Teal and Northern Mockingbird on Isla Guadalupe) he reports on the basis of personal communications when additional pertinent data can be found in the published accounts. I also wonder why the record of Eastern Kingbird rejected by Grinnell was accepted by Wilbur without explanation or comment.

Those who are interested in bird distribution at specific locales in Baja California (especially islands) will find their work increased by the need to cross-reference this book to the older literature. Again, some previously published records are included and some are excluded, perhaps according to the significance attached to them by this author. Also, the lack of specific details in some accounts presents difficulties. For example, Pomarine Jaegers are reported from Islas Todos Santos, San Martin, Cedros, and San Benito. Were they actually seen on the islands, or nearby? If nearby, how close to the islands?

In all fairness, it must be kept in mind that one can rarely be as thorough as one would like to be. But this raises the question of the purpose of this book and its intended audience. *Birds of Baja California* has been given the price and trappings of a major new treatise when it seems at best to be an "interim" work, a summary of established information combined with a useful but unremarkable number of new records. The fact that it is published by the University of California Press suggests it is an academic endeavor. If this were the case, I would have expected more information from specimen collections, particularly from the extensive post-Grinnell Baja California collections at the San Diego Natural History Museum. Apparently, Wilbur never visited this museum, even though it contains one of the largest collections of Baja California birds. I tend to agree with the seventeen co-authors of a 1981 commentary in the *Auk* (Ornithology as Science, Vol. 98:636-637) that records in regional summaries published by scientific organizations should be supported with documentation. I am also surprised at the apparent lack of involvement, contribution, and review by Mexican ornithologists. Several prominent Mexican researchers have been working in the region for nearly a decade, and until very recently they were not even aware that this publication is available!

If this work was never intended to be a rigorous and thorough scientific document, I would have expected more information of interest to the layman, such as guides to better birdwatching locations, seasonal distribution bar graphs, and additional information on the identification and life history of the few endemic species. It would also not be necessary to include so many specific references and credits for each account. The list of place names is helpful but the map is poor, so the traveler would be well advised to take along a copy of the detailed gazetteer in Grinnell's book as well as one of the commercially available maps (e. g., the excellent Baja Topographic Atlas Directory published by Topography International, Inc.).

This brings me to my final complaint about this work: the price. I fail to see the justification for the cost of the book. There are no color plates or photographs. It is nicely bound and printed on good quality paper, but that alone is not worth $40.00. Certainly it is well beyond what most Mexican students can afford, and more than I would expect the general public to pay. It would be far less expensive to photocopy the entire work. If this book had to be published, an inexpensive paperback version would have been preferable.

Despite its many weaknesses, this publication has several benefits. Since copies of Grinnell's work are so hard to come by, this present book, with all its flaws, is the only concise reference to the bird-life of Baja California available to the general public. There are quite a few specific new reports which are of great interest, even though many of these must be considered hypotheses for testing rather than scientific fact. The post-Grinnell literature citations are very useful. The most compelling reasons for coming out with this work at this time are to establish a benchmark against which future changes can be compared, and to publicize the need for conservation efforts in Baja California and the Sea of Cortez. I would have preferred to see a more rigorously reviewed and briefer paper presenting only new data, or a book as detailed, reliable, and useful as Grinnell's.

Volume 19, Number 2, 1988

Breeding Biology and Behavior of Hammond's and Western Flycatchers in Northwestern California *Howard F. Sakai* 49

First Record of the Wedge-tailed Shearwater in California *Richard Stallcup, Joseph Morlan, and Don Roberson* 61

The Abundance and Migration of Shorebirds at Two Puget Sound Estuaries *Joseph B. Buchanan* 69

NOTES

Foods Found in 103 Red-necked Phalaropes *Patti Powers Brown and Stanley W. Harris* 79

First Record of the Western Gull from Idaho *Michael H. Tove and Charles H. Trost* 81

Book Review *William T. Everett* 83

Bulletin Board 86

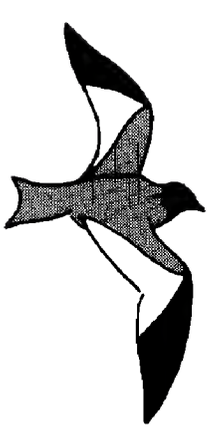
Cover photo by © Alan S. Hopkins, of San Francisco, California: White Wagtail (*Motacilla alba*), Gambell, Alaska, May 31, 1984.

Western Birds solicits papers that are both useful to and understandable by amateur field ornithologists and also contribute significantly to scientific literature. The journal welcomes contributions from both professionals and amateurs. Appropriate topics include distribution, migration, status, identification, geographic variation, conservation, behavior, ecology, population dynamics, habitat requirements, the effects of pollution, and techniques for censusing, sound recording, and photographing birds in the field. Papers of general interest will be considered regardless of their geographic origin, but particularly desired are reports of studies done in or bearing on the Rocky Mountain and Pacific states and provinces, including Alaska and Hawaii, western Texas, northwestern Mexico, and the northeastern Pacific Ocean.

Send manuscripts to Philip Unitt, 3411 Felton Street, San Diego, CA 92104. For matter of style consult the *Suggestions to Contributors to Western Birds* (8 pages available at no cost from the editor) and the *Council of Biology Editors Style Manual* (available for $24 from the Council of Biology Editors, Inc., 9650 Rockville Pike, Bethesda, MD 20814.

Reprints can be ordered at author's expense from the Editor when proof is returned or earlier.

Good photographs of rare and unusual birds, unaccompanied by an article but with caption including species, date, locality and other pertinent information, are wanted for publication in *Western Birds*. Submit photos and captions to Photo Editor.



WESTERN BIRDS

Vol. 19, No. 3, 1988

WESTERN BIRDS

Quarterly Journal of Western Field Ornithologists

President: Tim Manolis, 808 El Encino Way, Sacramento, CA 95864

Vice-President: Narca A. Moore-Craig, P.O. Box 254, Lakeview, CA 92353

Treasurer/Membership Secretary: Howard L. Cogswell, 1548 East Avenue, Hayward, CA 94541

Recording Secretary: Jean-Marie Spoelman, 4629 Diaz Drive, Fremont, CA 94536

Circulation Manager: Jerry R. Oldenettel, 4368 37th Street, San Diego, CA 92105

Directors: Peter Gent, Virginia P. Johnson, John S. Luther, Guy McCaskie, Timothy Manolis, Robert McKernan, Narca Moore-Craig, Joseph Morlan, Janet Witzeman

Editor: Philip Unitt, 3411 Felton Street, San Diego, CA 92104

Associate Editors: Cameron Barrows, Tim Manolis, Narca A. Moore-Craig, Thomas W. Keeney

Layout Artist: Virginia P. Johnson

Photo Editor: Bruce Webb, 5657 Cazadero, Sacramento, CA 95822

Review Editor: Richard E. Webster, 1114 Oneonta Dr., Los Angeles, CA 90065

Secretary, California Bird Records Committee: Don Roberson, 282 Grove Acre Ave., Pacific Grove, CA 93950

Editorial Board: Robert Andrews, Alan Baldridge, Andrew J. Berger, Laurence C. Binford, David F. DeSante, Jon L. Dunn, Richard Erickson, Kimball L. Garrett, Joseph R. Jehl, Jr., Ned K. Johnson, Virginia P. Johnson, Brina Kessel, Stephen A. Laymon, Paul Lehman, John S. Luther, Guy McCaskie, Joseph Morlan, Harry B. Nehls, Dennis R. Paulson, Stephen M. Russell, Oliver K. Scott, Ella Sorensen, Richard W. Stallcup, Charles Trost, Terence R. Wahl, Roland H. Wauer, Bruce Webb, Wayne C. Weber, Richard E. Webster

Membership dues, for individuals and institutions, including subscription to *Western Birds*: Patron, $1000; Life, $250; Supporting, $50 annually; Contributing, $25 annually; Regular, $14 U.S. ($17 outside U.S.) annually. Dues and contributions are tax-deductible to the extent allowed by law.

Send membership dues, changes of address, correspondence regarding missing issues, and orders for back issues and special publications to the Treasurer. Make checks payable to Western Field Ornithologists.

Back issues of *California Birds/Western Birds:* $15 per volume, $4.00 for single issues. Xerox copies of out of print issues (Vol. 1, No. 1; Vol. 2, Nos. 1 and 4; Vol. 6, No. 2): $4.50 each. *Checklist of the Birds of California:* $2.00 each, 10 or more $1.50 each. *Pelagic Birds of Monterey Bay, California:* $2.50 each, 10 or more $2.00 each, 40 or more $1.50 each. All postpaid.

Published January 31, 1989 ISSN 0045-3897

WESTERN BIRDS ADVERTISING RATES AND SPECIFICATIONS

Full page	4 x 6¾ inches	$60 per issue	$200 per year
Half Page	4 x 3⅜ inches	$40 per issue	$130 per year
Quarter Page	4 x 1 1/16 inches	$30 per issue	$110 per year

Offset printing, one column per page, 4 inches wide. Glossy, black and white photos are acceptable; half-tone screen size: 133 line. Photo-ready copy is requested. If this is not possible, extra charges for typesetting will be made as follows: $15 full page, $10 half page, $5 quarter page. Send copy with remittance to the Treasurer. Make checks payable to Western Field Ornithologists. A 15% commission is allowed for agencies.

WESTERN BIRDS

Volume 19, Number 3, 1988

BIOLOGY OF THE BLACK-VENTED SHEARWATER

WILLIAM T. EVERETT, Department of Birds and Mammals, San Diego Natural History Museum, P. O. Box 1390, San Diego, California 92112

In light of newly available information and the recent trend toward considering the Black-vented Shearwater (*Puffinus opisthomelas*) and its close relatives as distinct species, not subspecies of the Manx Shearwater (*Puffinus puffinus*), it seems appropriate to summarize current knowledge of the Black-vented Shearwater's biology. For this study, I drew information from the literature, data on specimens in the San Diego Natural History Museum (SDNHM), Western Foundation of Vertebrate Zoology, Los Angeles (WFVZ), Museum of Vertebrate Zoology, University of California, Berkeley (MVZ), Los Angeles County Museum of Natural History (LACM), California Academy of Sciences, San Francisco (CAS), Carnegie Museum of Natural History, Pittsburgh (CMNH), British Columbia Provincial Museum, Victoria (BCPM), American Museum of Natural History, New York (AMNH), the United States National Museum, Washington, D. C. (USNM), my own field notes of more than 10 years from islands and waters off California and Mexico, and communication with knowledgeable observers.

BREEDING DISTRIBUTION

The known breeding grounds of the Black-vented Shearwater are confined to Isla Guadalupe, Isla Natividad, and Islas San Benito off the Pacific coast of Baja California, Mexico (Figure 1). The species was described (Coues 1864) from a specimen (USNM 16990) taken at sea near Cabo San Lucas by John Xantus on 20 July 1859. In early 1886, W. E. Bryant (1887) heard numerous birds calling at night and found a decayed specimen on top of Isla Guadalupe, but occupied nests were not found there until 1892 (Anthony 1896). Other nesting sites remained undiscovered until 1897, when A. W. Anthony found a few nests on Islas San Benito (Anthony 1900a) and discovered the vast colony at Isla Natividad (Anthony 1900b, Kaeding 1905).

At Isla Guadalupe, the birds have been reported as "rather common" at several sites but at no place in any large colony (Anthony 1900b). In 1906, they were "abundant at night about the perpendicular cliffs near the north

end of the island" (Thayer and Bangs 1908). Nests were found in natural holes in the lava or under large boulders (Anthony 1896). More recently, colonies were found and studied by Carl L. Hubbs on small offshore islets at the south end of the island (Jehl and Everett 1985).

Little is known of the extent of the breeding population at Islas San Benito. As at Isla Guadalupe, nesting birds inhabit a few small caves and crevices scattered about the islands and are "not very abundant" (Anthony 1900a). On 14 April 1968, J. R. Jehl, Jr. (pers. comm.) found 20 active nests on San

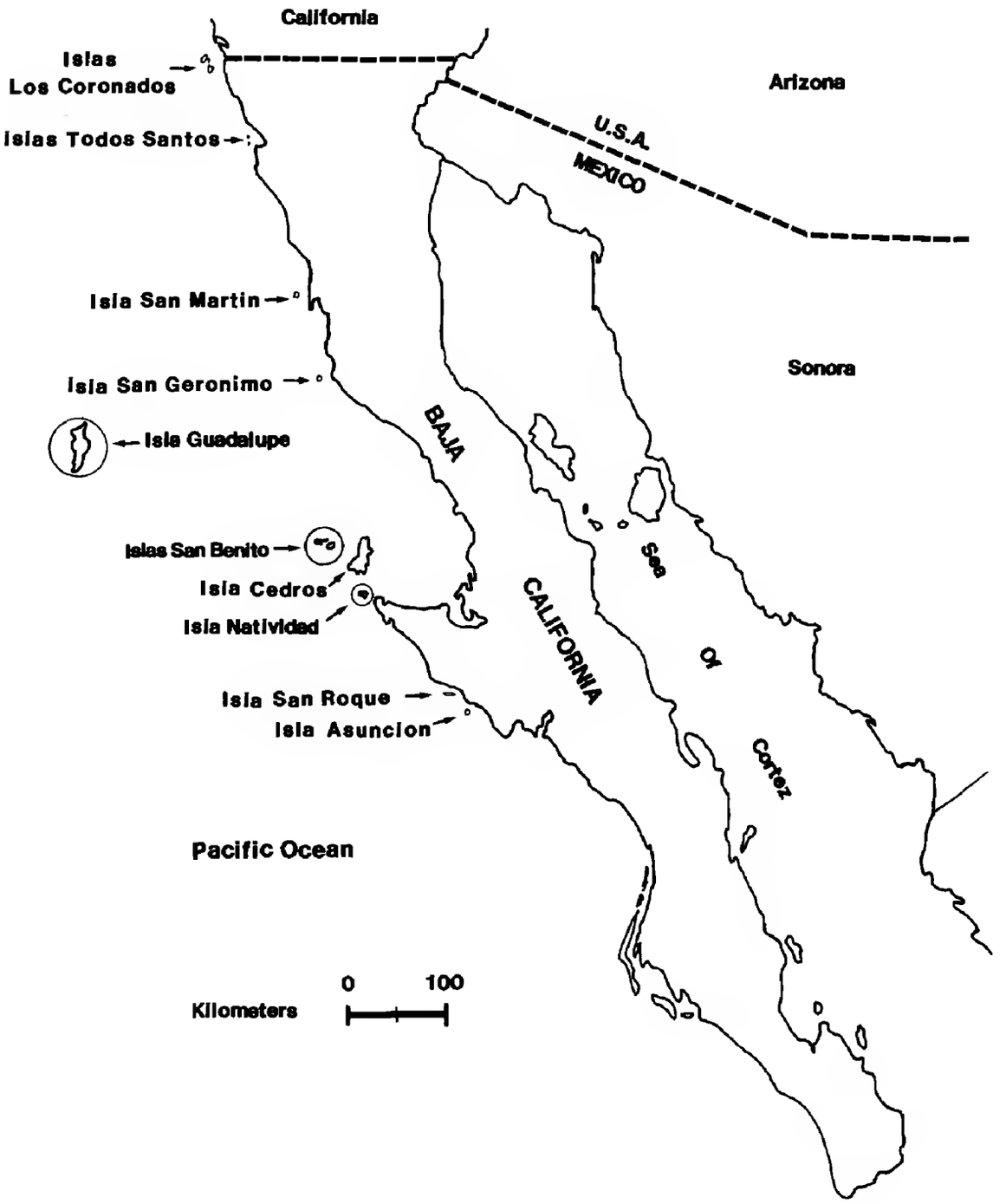


Figure 1. Principal seabird breeding islands of Baja California's Pacific coast, with documented breeding locales of *P. opisthomelas* circled.

Benito Este before he stopped searching. In 1975, Boswall (1978) found birds in seven locations, three of which had large downy chicks. R. L. DeLong and R. S. Crossin (unpubl.), during their work with the Pacific Ocean Biological Survey Program in 1968, estimated up to 150 breeding pairs on the island group. In February 1981, during the breeding season, I observed up to 350 birds near the islands at dusk.

The fine sandy soil of the south and east portions of Isla Natividad seems to best suit the burrowing habit of these birds, for the island clearly has been the stronghold of the species. Anthony (1900b) reported finding "thousands of burrows . . . like a honeycomb." In 1930 J. R. Pemberton collected eggs at Natividad (WFVZ) and noted "an immense colony. . . probably 250,000 occupied burrows." This figure is undoubtedly a great exaggeration. In April 1968 DeLong and Crossin (unpubl.) estimated 5000 burrows on the island. During my stay on the island in July 1987 I estimated, in areas of apparent highest density of burrow entrances, an average of 25 burrow entrances per 100 square meters. If the major colony is not larger than 4 square kilometers, which is my best estimate, this suggests not more than 10,000 burrows. The actual figure is probably somewhere between 5000 and 10,000 burrows, but this does not necessarily reflect population size or potential, since many burrows could be unoccupied or occupied by Cassin's Auklets (*Ptychoramphus aleuticus*). Also, the extent to which Black-vented Shearwaters inhabit areas on Natividad other than the main colony is unknown. Banks (1964) saw "thousands" of birds near the island on 21 April 1963 and noted that burrows were abundant and "most were occupied." In late March 1981 I saw 500-1000 birds staging at dusk near the south end of the island. In February 1987 I saw several hundred during a dusk transit 10 km west of Natividad. On 25 April 1987 R. L. Pitman (pers. comm.) saw "thousands . . . probably 10,000" near the south end of the island in the Canal de Dewey. No census has been attempted, but it seems likely this island gave rise to the enormous flocks of this species that were formerly reported at sea (see below).

UNCONFIRMED BREEDING REPORTS

There have been several erroneous reports of breeding by this species at other locales. The record of eggs collected by Captain C. M. Scammon at Santa Barbara Island (Brewster 1902) off southern California was later corrected by A. B. Howell (1917). Nelson (1921) reported shearwater burrows at Isla San Geronimo, near Punta Baja, but these were probably made by Cassin's Auklets, which breed abundantly there but had deserted the island by the time of his visit in August 1905. The A.O.U. Check-list (1957) listed Isla Asuncion (south of Natividad) as a breeding locale, perhaps on the casual comment of G. D. Hanna (1925), who reported "burrows of Cassin's Auklet or some shearwater everywhere." Hanna and A. W. Anthony (1923) again mentioned shearwater burrows on Asuncion and Isla San Roque, but I can find no additional evidence to support these claims. Although the most recent edition of the Check-list (A.O.U. 1983) has deleted the reference to Asuncion, it perpetuates the idea that Isla San Martin, off San Quintin, is a known breeding site. This idea probably resulted from the reports of A. B. Howell

(1910, 1911), who inferred breeding on Islas Los Coronados and Isla San Martin from sightings of birds near the islands during breeding season. Grinnell (1928) correctly questioned Howell's suppositions, which Friedmann et al. (1950) apparently accepted without question. This inclusion on the Mexican check-list was the sole reason (B. Monroe pers. comm.) for the retention of the island as a breeding locale on the North American check-lists (A.O.U. 1957, 1983). I know of no report or evidence of Black-vented Shearwaters nesting on Isla San Martin. I found no burrows on the island during several visits since 1979, but crevices and caves abound. Large flocks are frequently seen at nearby banks and at Cabo Colnett, north of the island. Feral cats are now well established at San Martin (pers. obs.), so it is unlikely that shearwaters will successfully breed there in the near future.

Wilbur (1987) reported Isla Cedros (near Isla Natividad) as a breeding locale, on the basis of information published by Banks (1964) and observations by K. Garrett. Both Banks (1964) and Garrett (pers. comm.) reported only birds seen near the island during the breeding season; neither suggested the birds were actually nesting.

At one time Isla Raza, in the Sea of Cortez, was identified as a nesting site on the basis of the presence of "old shearwater burrows" (Bancroft 1927). A. J. van Rossem (1945), who was with Bancroft when they found these burrows, was not totally convinced that they were of Black-vented Shearwaters, and the report was subsequently discarded (Palmer 1962). Recent work on Raza (Boswall and Barrett 1978) has not revealed any Black-vented Shearwaters breeding. The reference by Leigh (1941, p. 157) to shearwaters nesting on George's Island, in the northern Sea of Cortez, was unsupported and appears to be an assumption. Sightings in the northern Sea of Cortez during the breeding season in the last few years have led to speculation of local breeding (Anderson 1983), which awaits confirmation.

Many potential nesting sites exist in Baja California. It is possible that *P. opisthomelas* formerly bred at some of the islands mentioned above but was extirpated or deserted the colonies. Other locales where breeding is suspected, on the basis of sightings of birds in the immediate vicinity, include Rocas Alijos (Pitman 1985) and Isla San Geronimo (Pitman pers. comm.).

BREEDING SEASON

Current information allows the breeding phenology of the Black-vented Shearwater to be outlined as follows: At Isla Natividad birds begin nocturnal visits to nests at as early as November (Lamb 1927). At Isla Guadalupe fresh eggs have been found by 5 March (Jehl and Everett 1985) and as late as late June (J. R. Jehl Jr., R. S. Crossin, unpubl.). These dates can vary somewhat from year to year, and even from colony to colony in the same year (Crossin unpubl.). Typically, colonies are well occupied by early January and the peak of laying is in early April (Anthony 1900b, Kaeding 1905, Banks 1964). Young have been found as early as late April, and by mid-June many burrows have a chick (Jehl and Everett 1985). Fully grown young have been found in early July (pers. obs.) and early August (Anthony 1925). By mid-August most colonies have been vacated. The breeding season appears to be slightly later than that of Townsend's Shearwater (*P. auricularis*) (Jehl 1982), but this

hypothesis should be tested after further studies on both species. At Isla Natividad from 4 to 8 July 1987 I found several occupied burrows with large downy young and fresh carcasses of juveniles with small amounts of down still clinging to the body.

DISTRIBUTION AT SEA

Black-vented Shearwaters are found commonly from the breeding grounds north to Point Conception (34° 50′ N) and south to Cabo San Lucas (23° N) and are possibly regular south along the coast of mainland Mexico (Jehl 1974) to near the Gulf of Tehuantepec (Figure 2). Lack of field work in the

Figure 2. Distribution of *Puffinus opisthomelas*. Star indicates the only locality of extralimital occurrence documented with specimens.

southern range and problems of identification where the range of *P. opisthomelas* overlaps that of *P. auricularis* account for the uncertainty.

The species typically occurs within 25 km of the coast (except at Isla Guadalupe), but wandering individuals have been noted far offshore from Baja California at Rocas Alijos (24° 57′ N, 115° 45′ W) (Pitman 1985) and in California waters off San Clemente, Santa Cruz (Howell 1917, G. McCaskie pers. comm.), and San Miguel islands (Jehl 1973a). It has also entered large bays on the west coast of Baja California, such as Bahia San Bartolome (Townsend 1923) and Bahia Magdalena (Bancroft 1932, specimens SDNHM).

After breeding, some birds move north into the Southern California Bight, where they reach peak numbers from November to January (Ainley 1976). Extrapolations of density estimates from fall 1977 surveys (Briggs et al. 1987) indicate peak numbers of 20,000 to 30,000 individuals during this season. This pattern differs from that reported earlier (Anthony 1896, Howell 1917, Grinnell and Miller 1944), which suggested peak abundance from July to September. This discrepancy can be accounted for only by tremendous flexibility in the breeding and migration schedule or insufficient field data during the early part of this century. In recent years, however, very few birds have been seen in late summer off southern California (pers. obs.).

Dispersal north of Point Conception is irregular, varying from year to year. In some years, large numbers can be seen in fall as far north as the Monterey Bay region (Stallcup 1976, Beck 1910), but in other years the species is absent there. North of Monterey Bay verified records are few. There is one published observation from Southeast Farallon Island off San Francisco (three birds seen on 28 October 1975, DeSante and Ainley 1980). Briggs et al. (1987) reported "one record of three probable Black-vented Shearwaters near Eureka in December 1981." Anthony (1896) reported Black-vented Shearwaters as "not uncommon on several occasions off the Columbia River during the summer months and in November and January." Anthony, who was a reliable observer, unfortunately did not publish additional information on these sightings. On 29 August 1929, small white-bellied shearwaters "possibly. . . Black-vented" were observed just off Newport, Oregon (Gabrielson et al. 1930). The species is included on the Oregon check-list (Crabtree and Nehls 1981) on the basis of a more recent sight record; it is considered hypothetical in Washington (Wahl 1975, Mattocks et al. 1976) and regarded as very rare in British Columbia on the basis of a few midsummer sightings (e.g., Martin 1942, Guiguet 1953, Martin and Myres 1969, Guzman and Myres 1983) and five fall and winter specimens taken near Albert Head, Vancouver Island, in the late 1800s (Kermode 1904, Fannin 1898). I have examined three of these (BCPM 89, 1494, and 1495) and confirmed their identification.

Recent midsummer sightings of small black and white shearwaters in Alaska (Kessel and Gibson 1978), as well as some of the British Columbia reports, may pertain to the Manx Shearwater (*Puffinus puffinus, sensu* A.O.U. 1983) which is a long-distance migrant whose propensity for occasional wandering is well established (Palmer 1962, Slater 1970, Kinsky and Fowler 1973). The Manx Shearwater's normal migration places it in higher latitudes in the northern summer, and it is more accustomed to cooler water than is the Black-vented Shearwater (Ainley 1976). Harrison (1983) suggested that these northern sightings may pertain to the Newell's Shearwater of Hawaii (*P. auricularis*

newelli), but in light of its tropical distribution (King and Gould 1967) this appears less likely. Specimens will be required to settle the question of origin of these North Pacific vagrants.

South of Cabo San Lucas, the status and distribution of *P. opisthomelas* are poorly known. Additionally, there is potential for confusion because mixed-species (*opisthomelas/auricularis*) flocks occur in the region (Jehl 1974, 1982, Pitman 1986). Although the fifth edition of the A.O.U. Check-list (1957) reported Isla Clarion as a location of occurrence, I know of no supporting evidence. In any case, this was deleted from the sixth edition (1983), presumably as a result of the Black-vented Shearwater's absence from Jehl and Parkes' (1982) list of birds of the Revillagigedo Islands. Helbig (1983) reported "about 2000" near Puerto Vallarta, Jalisco, on 27 November 1980. Willett took two specimens (LACM 18954, 86400) at Bahia Tenacatita, Jalisco, on 18 February 1938. Pitman (unpubl.), during several cruises off southwest Mexico, has identified Black-vented Shearwaters on three occasions: a flock of 26 on 13 February 1980 about 30 nautical miles (nm) west of Bahia Navidad,

Figure 3. *Puffinus opisthomelas* in worn plumage, photographed 16 August 1984 in the central region of the Sea of Cortez, near Bahia de Los Angeles.

Photo by Bernie Tershy and Craig Strong

Jalisco, 1 on 4 June 1982 40 nm off Manzanillo, Colima, and 3 on 29 September 1986 about 40 nm off the southern coast of Michoacan. His notes for the region contain numerous other sightings, which because of viewing conditions could be identified only as "Manx-type" shearwaters. Murphy (1958) reported "many [Black-vented Shearwaters] seen feeding . . . about 40 miles off Punta San Telmo, southeast of Manzanillo" on 13 November 1956. R. G. B. Brown (unpubl.) reported two individuals off Oaxaca on 16 April 1981. The southernmost specimen that I am aware of (SDNHM 38461) was taken off Guerrero by J. R. Jehl, Jr. on 6 April 1973 at 17° 25′ N, 101° 17′ W. Jehl (1974) reported "two brownish birds (*opisthomelas*?) in the southern part of the Gulf of Tehuantepec" on 10 April 1973. Murphy (1952) reported on supposed Black-vented Shearwaters taken off Cabo Blanco, Costa Rica. These were misidentified, as he eventually realized; the specimens, now in AMNH, are Wedge-tailed Shearwaters (*P. pacificus*) (Slud 1964). Bourne and Dixon (1975) reported sightings of 288 *opisthomelas* on 21 January 1971 off El Salvador. This and reports of sightings between Hawaii and the Galapagos Islands (King and Pyle 1957) are interesting but more likely pertain to either race of *P. auricularis* (Pitman 1986).

There are sightings and photographs (Figure 3) but no specimens of this species from the Sea of Cortez. Helbig (1983) reported three birds between Topolobampo and La Paz on 4 June 1980. Jehl (1974) recorded three "probable" *opisthomelas* near Isla Cerralvo on 29 March 1973. In March 1887, M. A. Frazar saw "a large number of medium sized, white-breasted and dark-backed shearwaters" between Islas Carmen and Monserrat and near Isla Espiritu Santo that were "probably" this species (Brewster 1902). Farther north, near Isla Tiburon, D. R. Dickey (in van Rossem 1945) reported shearwaters in June 1928 that were "very probably" but "not certainly" this species. In late December 1931 van Rossem (1933, 1945) noted about a dozen Black-vented Shearwaters between Isla San Pedro Nolasco and Bahia Kino. Between 1983 and 1986 D. Breese, B. Tershy, and C. Strong (pers. comm.) recorded many sightings of Black-vented Shearwaters near Bahia de Los Angeles. These recent sightings suggest this species occurs regularly in the Sea of Cortez.

FEEDING

Little is known of this aspect of the biology of the Black-vented Shearwater. Rollo H. Beck (field notes, MVZ) reported sardines (*Sardinops* sp.) in the stomachs of specimens he collected in Monterey Bay in December 1910. Stephens (1921) reported Black-vented Shearwaters feeding on sardines near Islas Los Coronados. Anthony (1896) says herring (*Clupea* sp.) and other small fish are the main diet, with bait or refuse being ignored. In my experience, the birds are not ship-followers and are not attracted to any type of chum. They have been observed feeding "just outside the breakers" at Laguna San Ignacio (Huey 1927). North of Isla San Martin at Cabo Colnett, Anthony (1896) observed them plunging after prey in the foamy crests of breaking surf, although this is apparently quite unusual. A flock of nearly 12,000 birds (the largest flock reported in many years) was seen off La Jolla, California, in November 1979 feeding on a vast school of spawning squid (Unitt 1984).

MOLT AND PLUMAGES

According to Anthony (1896), Black-vented Shearwaters undergo a complete molt from July to August and a "more or less" complete molt of head and body feathers in January and February. Loomis (1918), after examining 139 specimens, concluded that the birds undergo a protracted postnuptial molt with great variation in timing among individuals. He also suggests the species may have a second downy plumage, as is well known in the closely related Manx Shearwater (Lockley 1942), but such a plumage is so far unconfirmed for the Black-vented. Figure 4 shows a downy young bird on Isla Natividad photographed on 7 July 1987.

Loomis (1918) believed birds with extensive gray mottling on the underparts were "apparently immature." This has not been verified. The "melanistic" specimen (MVZ 18691) pictured by Loomis (1918, plate 15) is actually a typical Short-tailed Shearwater (*P. tenuirostris*) (pers. obs.). This specimen was collected by the experienced Rollo H. Beck at Monterey Bay on 19 December 1910 and tentatively identified by him as a Christmas Shearwater (*P. nativitatis*) (field notes MVZ). The reason Loomis reidentified the specimen as *opisthomelas* is unknown. Leucism and partial albinism, which have been reported for other species of *Puffinus* (Mackrill and Yesou 1988), are so far unrecorded for *opisthomelas*.

Figure 4. Downy young *Puffinus opisthomelas*.

Photo by W. T. Everett

IDENTIFICATION

Jehl (1982) compared characters of *Puffinus* species normally found in the eastern tropical and temperate Pacific. Since *P. puffinus* of the North Atlantic is a possible wanderer, it is worth pointing out that it is similar to *P. auricularis* (both subspecies) in general appearance. Manx Shearwaters can even show the conspicuous white flanks typical of both races of *auricularis* (Hoskins et al. 1979) and also present on the Fluttering (*P. gavia*) and Hutton's (*P. huttoni*) Shearwaters of the southern hemisphere (Jehl 1982). The dark vent of *opisthomelas* may be the most reliable field mark. Observers should pay particular attention to face and underwing patterns, since these characters are poorly known but may be useful (G. McCaskie, pers. comm.). The complexity of this situation is illustrated by Figure 5, which shows a range of variation in ventral coloration within *opisthomelas*, and Figure 6, which compares *opisthomelas*, *gavia*, and *huttoni*.

Because many measurements and characters in this complex of species overlap, and there are plumage changes resulting from feather wear and also much individual variation, great care should be taken in identification of species out of their known range. Clear photographs are helpful, but present knowledge suggests that only specimens can document extralimital records adequately. Specimens should be prepared with one wing extended to allow examination of the underwing.

DISCUSSION

Clearly, much remains to be learned about this interesting and little-studied species. It is probable that unknown colonies exist on Isla Guadalupe (Jehl and Everett 1985). The current status and abundance of breeding birds on Islas San Benito and Isla Natividad also needs elucidation. Little is known of the voice of the Black-vented Shearwater. Information on behavior, breeding biology, and feeding ecology may provide details useful in settling the still unresolved question of systematic relationships of this and other similar species of the genus *Puffinus*.

Finally, there may be conservation problems for this species. Feral cats were already destroying birds on Isla Guadalupe in 1892 (Anthony 1896), and by 1922 feral cats were established on all known breeding islands (Anthony 1925). Since that time, all visitors to Isla Natividad have reported widespread predation by cats (Bancroft 1927, Banks 1964, Jehl 1973b, 1984, DeLong and Crossin unpubl., Karl Kenyon unpubl.). During my visit in July 1987 I saw no live feral cats, but dried scats were abundant. Dogs, kept as pets in the fishing village at Natividad, occasionally enter the colony and attempt to excavate burrows. The extent of predation deserves further study. In recent years, monofilament gill netting has increased substantially along the coast of Baja California. Nothing is known of the impact on Black-vented Shearwaters of this potentially devastating method of fishing.

In the early 1890s Anthony (1896) observed off Baja California a flock of Black-vented Shearwaters consisting of not less than 50,000 birds. Grinnell (1897) recorded "immense numbers" of these birds in the San Pedro Channel in May 1897. Enormous flocks such as these are no longer seen. In addition

Figure 5. Specimens of *Puffinus opisthomelas*, showing range of individual variation.

Figure 6. *Puffinus gavia* (top), *P. huttoni* (center), and *P. opisthomelas* (bottom).

to predation, overfishing for anchovies and sardines in both the U.S. and Mexico could have contributed to an apparent decline in abundance.

SUMMARY

On the basis of specimen collections, available literature, and personal observations, the Black-vented Shearwater is known to nest only at Isla Guadalupe, Islas San Benito, and Isla Natividad, off the west coast of Baja California, Mexico. Birds occupy the breeding grounds at least six months of the year. The northernmost documented occurrence is in British Columbia, Canada, the southernmost, off Guerrero, Mexico. The species' diet includes squid and small fish. Its molt is complex and not well known. Specimens are essential for documentation of extralimital occurrences of this and other related species. Monitoring of breeding colonies is recommended to assess or prevent a population decline.

ACKNOWLEDGMENTS

Daniel W. Anderson, Joseph R. Jehl, Jr., Guy McCaskie, and Robert L. Pitman reviewed early drafts of this paper and provided constructive comments and additional information. Lloyd Kiff (WFVZ), Amadeo Rea (SDNHM), Ned Johnson (MVZ), and Wayne Campbell (BCPM) graciously provided access to specimens. Douglas Bell (MVZ), David Lewis, Karl Kenyon, F. Gary Stiles, Kimball L. Garrett, and Dawn Breese also provided much useful unpublished information. Bernie Tershy and Craig Strong allowed access to and publication of their photographs. Special thanks to Tom Banks and the Foundation for Field Research for providing transportation to Isla Natividad.

LITERATURE CITED

Ainley, D. G. 1976. The occurrence of seabirds in the coastal region of California. W. Birds 7:33-68.

American Ornithologists' Union. 1957. Check-list of North American Birds. 5th ed. Am. Ornithol. Union, Baltimore, MD.

American Ornithologists' Union. 1983. Check-list of North American Birds. 6th ed. Am. Ornithol. Union, Lawrence, KS.

Anderson, D. W. 1983. The seabirds, in Island Biogeography in the Sea of Cortez (T. J. Case and M. L. Cody, eds.), pp. 246-264. Univ. of Calif. Press, Berkeley.

Anthony, A. W. 1896. The Black-vented Shearwater (*Puffinus opisthomelas*). Auk 13:222-228.

Anthony, A. W. 1900a. A night on land. Condor 2:28-29.

Anthony, A. W. 1900b. Nesting habits of the Pacific Coast species of the genus *Puffinus*. Auk 17:247-252.

Anthony, A. W. 1925. Expedition to Guadalupe Island, Mexico, in 1922. The birds and mammals. Proc. Calif. Acad. Sci., Ser. 4, 14:277-320.

Bancroft, G. 1927. Notes on the breeding and insular birds of central Lower California. Condor 29:188-195.

Bancroft, G. 1932. Lower California: A Cruise. The Flight of the Least Petrel. G. P. Putnam's Sons, New York.

Banks, R. C. 1964. Birds and mammals of the voyage of the "Gringa." Trans. San Diego Soc. Nat. Hist. 13:177-184.

Beck, R. H. 1910. Water birds of the vicinity of Point Pinos, California. Proc. Calif. Acad. Sci., Ser. 4, 3:57-72.

Boswall, J. 1978. The birds of the San Benito Islands, Lower California, Mexico. Bristol Ornithol. 11:23-32.

Boswall, J., and Barrett, M. 1978. Notes on the breeding birds of Isla Raza, Baja California. W. Birds 9:93-108.

Bourne, W. R. P., and Dixon, T. J. 1975. Observations of seabirds 1970-1972. Sea Swallow 24:65-88.

Briggs, K. T., Tyler, W. B., Lewis, D. B., and Carlson, D. R. 1987. Bird communities at sea off California: 1975 to 1983. Studies Avian Biol. 11.

Brewster, W. 1902. Birds of the Cape Region of Lower California. Bull. Mus. Comp. Zool. 41:1-241.

Bryant, W. E. 1887. Additions to the avifauna of Guadalupe Island. Bull. Calif. Acad. Sci., Ser. 2, 2:237-320.

Coues, E. 1864. A critical review of the family Procellariidae, embracing the Puffineae. Proc. Acad. Nat. Sci. Philadelphia, 1864, Part II, pp. 116-144.

Crabtree, T. J., and Nehls, H. B. 1981. A checklist of the birds of Oregon. W. Birds 12:145-156.

DeSante, D. F., and Ainley, D. G. 1980. The avifauna of the South Farallon Islands, California. Studies Avian Biol. 4.

Fannin, J. 1898. Check list of British Columbia Birds. A Preliminary Catalog of the Collections of Natural History and Ethnology in the Provincial Museum, pp. 13-55. Br. Columbia Prov. Mus., Victoria.

Friedmann, H., Griscom, L., and Moore, R. T. 1950. Distributional checklist of the birds of Mexico, Part I. Pac. Coast Avifauna 29.

Gabrielson, I. N., Jewett, S. G., and Braly, J. C. 1930. Some notes from the Oregon coast. Murrelet 11:10-12.

Grinnell, J. 1897. Report on the birds recorded during a visit to the islands of Santa Barbara, San Nicolas and San Clemente, in the spring of 1897. Pasadena Acad. Sci. Publ. No. 1.

Grinnell, J. 1928. A distributional summation of the ornithology of Lower California. Univ. Calif. Pub. Zool. 32:1-300.

Grinnell, J., and Miller, A. H. 1944. The distribution of the birds of California. Pac. Coast Avifauna 27.

Guiguet, C. J. 1953. An ecological study of Goose Island, British Columbia, with special reference to mammals and birds. Occ. Papers Br. Columbia Prov. Mus. 10.

Guzman, J. R., and Myres, M. T. 1983. The occurrence of shearwaters (*Puffinus* spp.) off the west coast of Canada. Can. J. Zool. 61:2064-2077.

Hanna, G. D. 1925. Expedition to Guadalupe Island, Mexico, in 1922. General report. Proc. Calif. Acad. Sci., Ser. 4, 14:217-275.

Hanna, G. D., and Anthony, A. W. 1923. A cruise among desert islands. Natl. Geog. Mag. 44:71-99.

Harrison, P. 1983. Seabirds, an Identification Guide. Houghton Mifflin, Boston.

Helbig, A. 1983. Notes on the distribution of seabirds in western Mexico. Gerfaut 73:147-160.

Hoskins, H., Richards, M. W., and Sharrock, J. T. R. 1979. Best recent black-and-white bird-photographs. Br. Birds 72:580-589.

Howell, A. B. 1910. Notes from Los Coronados Islands. Condor 12:184-187.

Howell, A. B. 1911. Some birds of the San Quintin Bay region, Baja California. Condor 13:151-153.

Howell, A. B. 1917. Birds of the islands off the coast of southern California. Pac. Coast Avifauna 12.

Huey, L. M. 1927. The bird life of San Ignacio and Pond lagoons on the west coast of Lower California. Condor 29:239-243.

Jehl, J. R., Jr. 1973a. Late autumn observations of pelagic birds off southern California. W. Birds 4:45-52.

Jehl, J. R., Jr. 1973b. Studies of a declining population of Brown Pelicans in northwestern Baja California. Condor 75:69-79.

Jehl, J. R., Jr. 1974. The near-shore avifauna of the Middle American west coast. Auk 91:681-699.

Jehl, J. R., Jr. 1982. The biology and taxonomy of Townsend's Shearwater. Gerfaut 72:121-135.

Jehl, J. R., Jr. 1984. Conservation problems of seabirds in Baja California and the Pacific Northwest, in Status and Conservation of the World's Seabirds (J. P. Croxall, P. G. H. Evans, and R. W. Schreiber, eds.), pp. 41-48. ICBP Tech. Publ. 2.

Jehl, J. R., Jr., and Parkes, K. C. 1982. The status of the avifauna of the Revillagigedo Islands, Mexico. Wilson Bull. 94:1-19.

Jehl, J. R., Jr., and Everett, W. T. 1985. History and status of the avifauna of Isla Guadalupe, Mexico. Trans. San Diego Soc. Nat. Hist. 20:313-336.

Kaeding, H. B. 1905. Birds from the west coast of Lower California and adjacent islands. Condor 7:105-138.

Kermode, F. 1904. Catalog of British Columbia Birds. Br. Columbia Prov. Mus., Victoria.

Kessel, B., and Gibson, D. D. 1978. Status and distribution of Alaska birds. Studies Avian Biol. 1.

King, J. E., and Pyle, R. L. 1957. Observations of seabirds in the tropical Pacific. Condor 59:27-39.

King, W. B., and Gould, P. J. 1967. The status of Newell's race of the Manx Shearwater. Living Bird 6:163-186.

Kinsky, F. C., and Fowler, J. A. 1973. A Manx Shearwater (*Puffinus p. puffinus*) in New Zealand. Notornis 20:14-20.

Lamb, C. C. 1927. The birds of Natividad Island, Lower California. Condor 29:67-70.

Leigh, R. 1941. Forgotten Waters. Lippincott, Philadelphia.

Lockley, R. M. 1942. Shearwaters. Dent, London.

Loomis, L. M. 1918. Expedition of the California Academy of Sciences to the Galapagos Islands, 1905-1906. A review of the albatrosses, petrels, and diving petrels. Proc. Calif. Acad. Sci., Ser. 4, 2:1-187.

Mackrill, E. J., and Yesou, P. 1988. Leucism and partial albinism in Balearic race of Manx Shearwater. Br. Birds 81:235-236.

Martin, P. W. 1942. Notes on some pelagic birds of the coast of British Columbia. Condor 44: 27-29.

Martin, P. W., and Myres, M. T. 1969. Observations on the distribution and migration of some seabirds off the outer coasts of British Columbia and Washington State, 1946-1949. Syesis 2:241-256.

Mattocks, P. W., Jr., Hunn, E. S, and Wahl, T. R. 1976. A checklist of the birds of Washington State, with recent changes annotated. W. Birds 7:1-124.

Murphy, R. C. 1952. The Manx Shearwater, *Puffinus puffinus*, as a species of worldwide distribution. Am. Mus. Novitates 1586.

Murphy, R. C. 1958. The vertebrates of SCOPE, November 7-December 16, 1956, in Physical, chemical, and biological oceanographic observations obtained on Expedition SCOPE in the eastern tropical Pacific November-December 1956 (R. C. Holmes et al., eds.), pp. 101-111. U.S. Dept. Interior, Spec. Sci. Rept., Fisheries, No. 279.

Nelson, E. W. 1921. Lower California and its natural resources. Natl. Acad. Sci. 16, First Memoir, 1921.

Palmer, R. S. (ed.) 1962. Handbook of North American Birds. Vol. 1. Yale Univ. Press, New Haven, CT.

Pitman, R. L. 1985. The marine birds of Alijos Rocks, Mexico. W. Birds 16:81-92.

Pitman, R. L. 1986. Atlas of seabird distribution and relative abundance in the Eastern Tropical Pacific. Admin. Rep. LJ 86-02C. Natl. Mar. Fish. Serv., Southwest Fisheries Center, La Jolla, CA 92038.

Slater, P. 1970. A Field Guide to Australian Birds. Vol. 1, Non-Passerines. Rugby, Adelaide.

Slud, P. 1964. The birds of Costa Rica, distribution and ecology. Bull. Am. Mus. Nat. Hist. 128.

Stallcup, R. W. 1976. Pelagic birds of Monterey Bay, California. W. Birds 7:113-136.

Stephens, F. 1921. Early spring notes on birds of Coronado Islands, Mexico. Condor 23:96-97.

Thayer, J. E., and Bangs, O. 1908. The present state of the ornis of Guadaloupe [*sic*] Island. Condor 10:101-106.

Townsend, C. H. 1923. Birds collected in Lower California. Bull. Am. Mus. Nat Hist. 48:1-26.

Unitt, P. 1984. The birds of San Diego County. San Diego Soc. Nat. Hist. Memoir 13.

Van Rossem, A. J. 1933. Records of some birds new to the Mexican state of Sonora. Condor 35:198-200.

Van Rossem, A. J. 1945. A distributional study of the birds of Sonora, Mexico. Mus. Zool., La. State Univ. Occ. Paper 21.

Wahl, T. R. 1975. Seabirds in Washington's offshore zone. W. Birds 6:117-134.

Wilbur, S. R. 1987. Birds of Baja California. Univ. of Calif. Press, Berkeley.

Accepted 15 November 1988

AN INCREASING WHITE-FACED IBIS POPULATION IN OREGON

GARY L. IVEY, Malheur National Wildlife Refuge, HC 72-Box 245, Princeton, Oregon 97721

MARK A. STERN, The Nature Conservancy, 1205 NW 25th Street, Portland, Oregon 97210

CHRISTOPHER G. CAREY, Oregon Department of Fish and Wildlife, P. O. Box 8, Hines, Oregon 97738

During the 19th century, there were periodic reports of White-faced Ibises (*Plegadis chihi*) in Oregon. Most of the records were from the Harney Basin in Harney Co. (Jobanek 1987). In 1908, W. L. Finley and H. T. Bohlman were the first to document the species' breeding in Oregon, recording a colony of 500 ibises on Malheur Lake in the Harney Basin (Finley 1908). Extreme drought during the 1930s severely reduced this colony, and no ibises at all nested in some years. In 1940 a small well-established colony was still active at Malheur Lake (Gabrielson and Jewett 1970). Despite periodic sightings of ibises in the Warner Basin and at Summer Lake, in Lake Co., Ryder (1967) reported that the only colony in Oregon was at Malheur Lake. During the 1960s and 1970s, the number of breeding pairs on Malheur Lake increased from 10 in 1963 to 190 in 1979 (Thompson et al. 1979).

Since 1980, the number of breeding pairs of ibises in Oregon has increased dramatically (Table 1). During this period, sightings of ibises have increased throughout Oregon (H. Nehls pers. comm.). This increase has coincided with above-average precipitation in the region and record high water levels in many of the closed lake-basin systems throughout the Intermountain West. Here we discuss recent increases in the population of ibises nesting in Harney Basin and the pioneering of White-faced Ibises to new areas in Oregon.

METHODS

The U.S. Fish and Wildlife Service has conducted annual colonial waterbird surveys on Malheur National Wildlife Refuge since 1966. Before 1978, birds were counted from the ground by observers in air-thrust boats. Since 1978, helicopters, fixed-wing airplanes, and ground visits have been used to census birds. Beginning in 1985, counts were conducted cooperatively with the Oregon Department of Fish and Wildlife, and the area covered was expanded to include most of southeast Oregon, with the greatest effort in the Harney Basin.

Figure 1 shows locations of the colonies we discuss.

HARNEY BASIN

Before 1982, ibises nested only at Malheur Lake (except in 1963 when a colony was active in a pond 3 km south of the lake). The Malheur Lake colony had increased to 650 nesting pairs in 1981. Heavy precipitation (208% of normal) preceding the 1982 nesting season raised the level of Malheur Lake and flooded the historic colony site, causing the ibises to shift to a new colony on private land

Table 1 Locations and Sizes of White-faced Ibis Colonies in Oregon, 1980-1987

Year	Active colonies (number of pairs)	Total nesting pairs
1980	Malheur Lake (600)	600
1981	Malheur Lake (650)	650
1982	Lawen (900)	900
1983	Lawen (400), Vogler Marsh (20)	420
1984	Squarewell (750), Vogler Marsh (130), Warbler Pond (30)	910
1985	Squarewell (500) Vogler Marsh (450) Red-S (230), Sodhouse Bay (110), Knox Pond (120)	1410
1986	Squarewell (1600), Knox Pond (420) Sodhouse Bay (70), Silver Lake, Harney Co. (5)	2095
1987	Knox Pond (1200), Wright's Pond (350), Lava Swamp (125), Island Ranch (800), Greaser Reservoir (40), Anderson Lake (20), Silver Lake, Lake Co. (60)	2595

ca. 6 km southwest of Lawen, along the north edge of Malheur Lake. The number of nesting ibis increased in this Lawen colony to record levels in 1982.

In 1983, precipitation was 288% of normal in the Harney Basin, raising Malheur Lake 1 meter and reducing the amount of emergent vegetation available for nesting in the Lawen colony. Fewer ibises nested in 1983, and a new colony developed ca. 19 km southeast of Burns in Vogler Marsh.

Precipitation in the Harney Basin in 1984 was 287% of normal, causing Malheur Lake to rise another 1.2 m. The Lawen colony was inundated and abandoned, while the Vogler Marsh colony grew. A large new colony developed at Squarewell (ca. 8 km west of Lawen) on the Silvies River. A small colony at Warbler Pond in the northwest portion of the refuge was abandoned because water levels dropped rapidly during the nesting period.

In 1985, precipitation was near normal (117%), and Malheur Lake was relatively stable during the nesting period. Numbers of ibises in the Vogler Marsh and Squarewell colonies increased, and three new colonies appeared. One was ca. 1 km northeast of the Vogler Marsh colony in the Red-S area, another developed at Sodhouse Bay, in Malheur Lake near the refuge headquarters, and the third developed at Knox Pond on the refuge (ca. 8 km northeast of Frenchglen).

Precipitation was slightly above normal in 1986 (147%), and four ibis colonies were active, including Knox Pond, Squarewell, Sodhouse Bay, and a small new colony at Silver Lake, Harney Co. (ca. 39 km southwest of Burns). Nesting ibis pairs in the Knox Pond and Squarewell colonies increased, while the Sodhouse Bay colony decreased, probably because of loss of emergent vegetation due to continued high lake levels.

During 1987, because precipitation was slightly below normal, Malheur Lake declined ca. 0.8 m. Consequently, the large Squarewell and the smaller Sodhouse Bay and Silver Lake colonies were dry and not used by ibises. Two new colonies appeared on the refuge in the Blitzen Valley at Wright's Pond (ca. 3 km southwest of refuge headquarters) and at Lava Swamp (ca. 13 km west of Diamond), and another large colony developed on a pond on the Island Ranch (ca. 10 km west of Lawen).

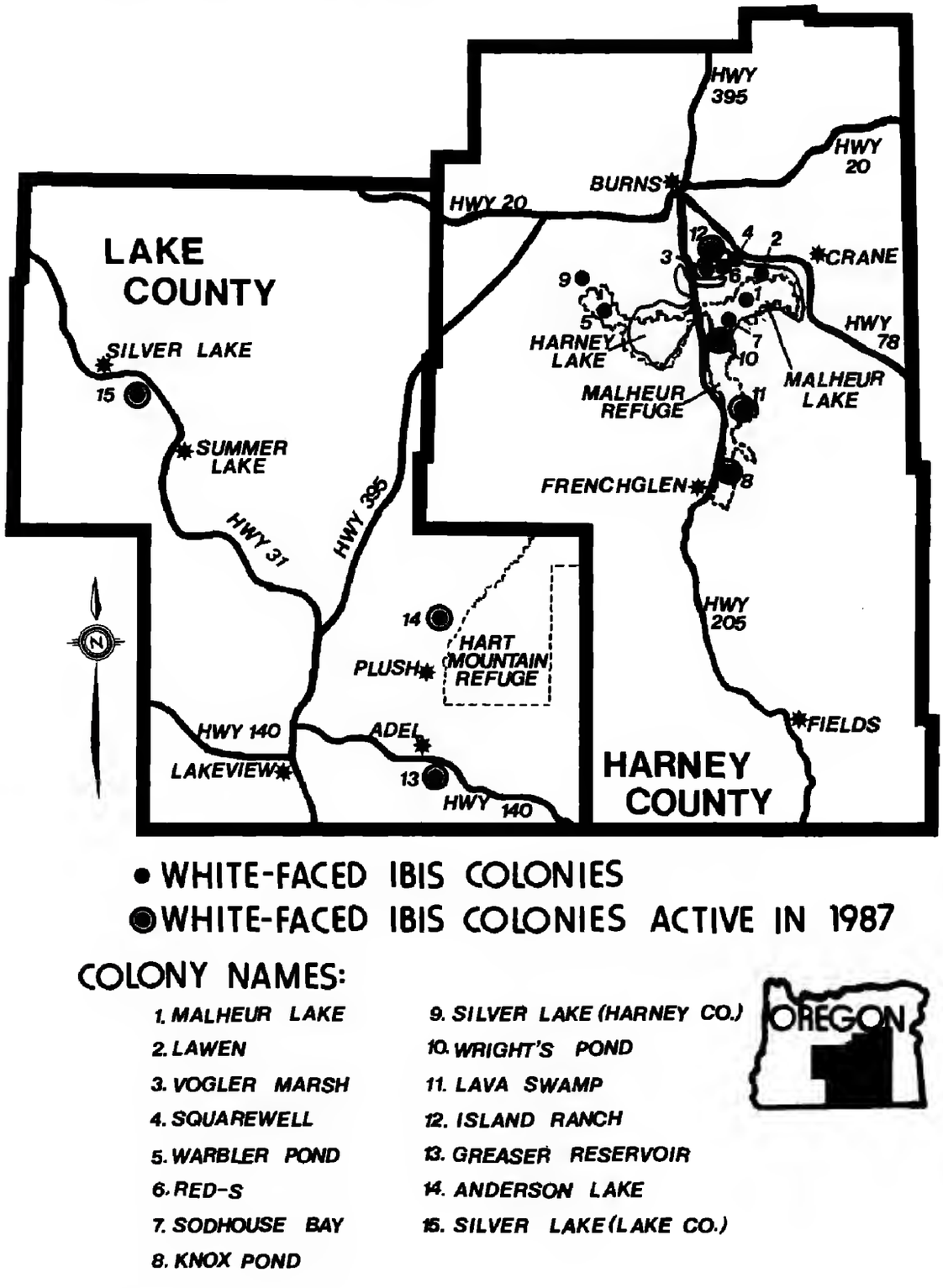


Figure 1. White-faced Ibis colonies in Oregon, 1980-1987.

OTHER OREGON LOCATIONS

Outside the Harney Basin, in Lake Co., three other White-faced Ibis colonies were located in 1987. Stern found two colonies within the Warner Basin, one 4 km west of Greaser Reservoir, the other on the west edge of Anderson Lake. Carey found a third colony at Silver Lake in northwest Lake Co. Both Anderson and Silver Lake colonies were dry before the wet cycle which began in 1982, and ibis colonies at these two sites could have been established only during this period of high water.

CONCLUSION

It appears that nesting populations of the White-faced Ibis in Oregon have increased faster than can be explained by recruitment from the local population. We believe that the increase was partially due to displacement of ibises from nesting areas outside Oregon. Flooding of the marshes of the Great Salt Lake in Utah from 1982 through 1985 greatly reduced nesting habitat in that area, reducing the nesting population by 80% (D. Paul pers. comm.). We suspect the increase in Oregon may be due, in part, to the relocation of birds from Utah.

ACKNOWLEDGMENTS

We thank D. Fix, C. D. Littlefield, H. Nehls, D. Paullin, and P. Unitt for their comments on this manuscript and J. Vawter for typing assistance.

LITERATURE CITED

Finley, W. L. 1908. Reports of field agents: Report of William L. Finley. Bird-Lore 10:291-295.

Gabrielson, I. N., and Jewett, S. G. 1970. Birds of the Pacific Northwest. Dover, New York.

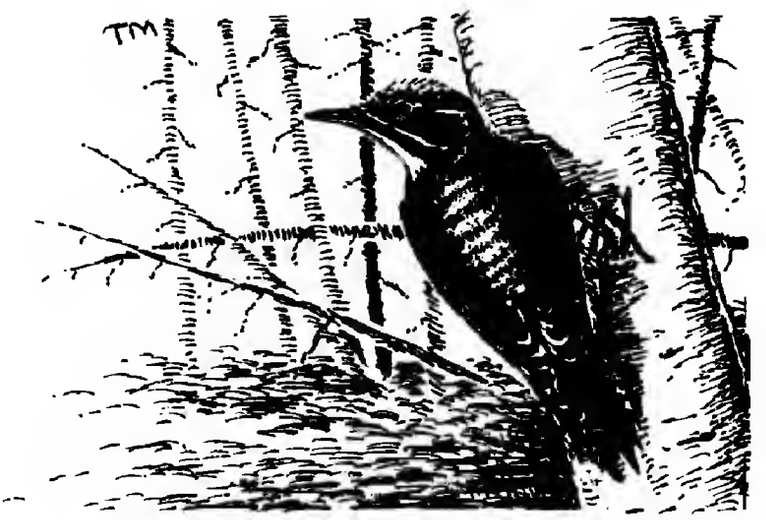
Jobanek, G. A. 1987. Early records of the White-faced Ibis in Oregon. Oregon Birds 13:210-215.

Ryder, R. A. 1967. Distribution, migration, and mortality of the White-faced Ibis (*Plegadis chihi*) in North America. Bird-Banding 38:257-277.

Thompson, S. P., Littlefield, C. D., and Ryder, R. A. 1979. Historical review and status of colonial nesting birds on Malheur National Wildlife Refuge, Oregon. Proc. Colonial Waterbird Group 3:156-164.

Accepted 20 July 1988

The following article is the second in a series on California rarities edited by Morlan and Roberson. It is based on materials submitted to the California Bird Records Committee (CBRC). The description and circumstances were edited from the accounts of the observer, and have been reviewed by him. Roberson prepared the distributional summary and Morlan prepared the identification summary. In this way we hope that much important information accumulated in CBRC files will become widely available.



Three-toed Woodpecker *Sketch by Tim Manolis*

FIRST RECORD OF THE THREE-TOED WOODPECKER IN CALIFORNIA

JOHN TROCHET, 633 46th St., Sacramento, California 95819
JOSEPH MORLAN, 417 Talbot Ave., Albany, California 94706
DON ROBERSON, 282 Grove Acre Ave., Pacific Grove, California 93950

In the late afternoon of 2 November 1985, Trochet heard the quiet tapping of a woodpecker. He was hiking along the South Fork of Pine Creek, about $2\frac{1}{4}$ miles from the Pine Creek trailhead in the South Warner Wilderness area of the Warner Mountains, Modoc County, extreme northeastern California. Trochet traced the tapping to its source and was surprised to discover a male Three-toed Woodpecker *Picoides tridactylus*. The bird was working the north side of a large White Fir *Abies concolor*, 30-35 feet above the ground, and was easily approached as it probed on broken branch stubs with a heavy growth of lichen. It moved quietly up the tree and quartered around to the side. After a few minutes of quiet searching, it flew to the next tree 20 yards away, giving a single sharp, slightly musical "chik" note. Trochet followed it with difficulty, falling once on the steep icy slope, but approached the bird again. The bird then became alert, called, and flew twice to the north sides of other firs, eventually stopping to give a double vocalization, before flying away to the east under the forest canopy. The bird was viewed for a total of about five minutes. Trochet took the following description:

A dark woodpecker about the size of a Hairy Woodpecker *P. villosus*, seen recently. The head was black with two narrow white curvilinear lines: one originated immediately

behind the eye and curved gently downward, broadening to its terminus on the side of the neck, and the second originated at the gape, broadening very slightly as it extended back with little curving to its terminus just below and behind the auriculars. This lower white stripe set off a doubly-broad blackish malar stripe which connected with the black of the neck. The crown was yellow with a slight greenish cast and some short fine streaky extensions into the forecrown and hindcrown. The chin and throat were white.

The hindneck and uppermost back were mottled black on white, mostly whitish, with the remainder of the back rather crisply banded, in "ladder-backed" fashion, with black and white bands of equal widths. The folded wings were basically black and extended about half the length of the tail. The outer webs of the primaries had inconspicuous whitish spots coalescing on the folded wing as six to eight transverse lines across those feathers; visible primary tips had narrow white fringes. The tertials had whitish spots, bordering the black and white barring of the back. The upper tail coverts were black. The two central pairs of stiff, pointed tail feathers were black; the next pairs were white with black spotting on the more medial visible feathers; and the outermost retrix appeared entirely white.

The underparts were white with heavy black bars on the sides and flanks; on the flanks these bars were especially heavy and extended more toward the ventral midline. The sides of the undertail coverts were white; the belly was not seen.

The bill was black, straight and chisel-like, typical for a woodpecker. The eyes and legs were dark, but no attempt was made to count the toes (I am somewhat embarrassed to say!).

In flight, the woodpecker appeared basically black with some white on the sides of the face and an off-white mid-back.

Compared to the Black-backed Woodpecker *P. arcticus* (two of which were seen early the same day), this bird was much whiter in several areas of plumage. The strong postocular line was striking, while it is much narrower and shorter, and sometimes absent, on the Black-backed. The white wing markings were more extensive; the Black-backeds seen that day had lacked tertial markings entirely. The barred back is a key mark distinguishing the species. The yellow crown patch was both more extensive and less distinctly separated from the black feathers fore and aft than in the male Black-backed seen earlier. This bird seemed slightly smaller, its bill seemed proportionately shorter, and the side and flank barring seemed crisper, less smudged. These impressions may suffer somewhat from differences in lighting—good lighting and silhouettes against light backgrounds for the Black-backeds seen earlier; very subdued, late afternoon light against dark shaded backgrounds for the Three-toed. Nonetheless there were real pattern differences.

I was aware that some juvenile Hairy Woodpeckers have yellowish crowns and a suggestion of barred back or barred flanks. However, Hairy Woodpeckers should always lack barring on the sides, have much less heavy barring on the flanks, and have a very different facial pattern, with broader white lines on the face. The upper line originates above the eye and sometimes goes forward of it; the lower line broadens to coalesce with a large white patch behind the auriculars that is sometimes contiguous with the white feathering of the back. In essence, the Hairy Woodpecker has a black-and-white head, while this bird had a black head with some white stripes.

The record was accepted 9-1 by the California Bird Records Committee after two circulations and is the first for California (Bevier in prep.). Two prior reports were not accepted (Binford 1985, Morlan 1985). The Committee felt that Trochet's description fit resident *P. t. fasciatus* of southern Oregon very well.

The dissenting member wondered why more California records of this "resident" species were not available. Others felt that the distance of this sighting

from resident populations was short enough for a wanderer or possibly a precursor of range expansion. The central issue contributing to the lone negative vote was the propriety of accepting single-observer first state records without other documentation (such as a photograph). Some state and provincial committees, and the A.O.U. Check-list Committee (1983, 1987), do not accept such records, either excluding them from consideration, relegating them to "hypothetical" lists or accepting them in a lesser level of the main list. Nonetheless, the California Bird Records Committee evaluates and occasionally accepts first state records supported only by the description of a single observer. This is the second such species admitted to the state list, following the Sooty Tern *Sterna fuscata* (Morlan 1985). The Committee feels it appropriate to review each such record on its own merits. For any record, if the details convince at least 9 of the 10 members, the record is accepted. The description and CBRC comments, open to researchers, remain on permanent file, and publication such as this makes the documentation even more accessible. The Committee welcomes comments that bear on the correctness of any of its decisions.

DISTRIBUTIONAL SUMMARY

The Three-toed Woodpecker ranges through the northern coniferous forests of the Holarctic Region, in Eurasia from Scandinavia to Siberia, south locally to southern Europe and western China, and in North America from northwestern Alaska to Newfoundland, south locally to southern Oregon, northern New England, and in the Rocky Mountains to south-central New Mexico (A.O.U. 1983; figure 1). Although mostly resident in North America, the race *P. t. bacatus* has occurred in winter south of the breeding range to Nebraska, Iowa, Pennsylvania, and Delaware (A.O.U. 1957, DeSante and Pyle 1986).

Oregon populations occur in the Wallowa and Blue mountains of the northeast, and along the Cascades as far south as Crater Lake National Park, Klamath County (Ramsey 1978), reaching their southern terminus at the eastern base of Mt. McLoughlin, Jackson County (Gabrielson and Jewett 1940), only 30 miles north of the California border (but 140 miles northwest of the California sighting).

Bock and Bock (1974) suggested that the distribution of this species was closely tied to the distribution of spruce *Picea* trees. In the Wallowas and Cascades the spruce is Engelmann *P. engelmannii*, a species whose range barely reaches California, where it is limited to Russian Peak in Siskiyou County and Upper Clark Creek in Shasta County (Munz 1965, Griffin and Critchfield 1972). Future searching of these areas might reveal additional Three-toed Woodpeckers. Recent research, however, suggests that in the Cascades of central Oregon this species may be associated with the Lodgepole Pine *Pinus contorta* (R. Goggans pers. comm.). The bark of the Lodgepole Pine is similar to that of spruce in its flakiness, and this type of bark structure may be preferred by Three-toed Woodpeckers for foraging.

Northern and higher mountain populations of the Three-toed Woodpecker show minor migratory movements and may even be irruptive after insect epidemics (Short 1982, Yunick 1985). Wandering has been noted in northeastern Oregon (e.g., a record near Baker, Baker County, some 50 miles south

of the Wallowas, in winter 1986-87; Anderson 1987), and this November record for California might be attributed to such movements.

SUBSPECIES

Short (1982) recognized eight races of the Three-toed Woodpecker, three in North America: eastern and mid-western *bacatus*, Rocky Mountain *dorsalis*, and far western *fasciatus*. The latter ranges from Alaska and the Yukon south along the Cascades to southern Oregon (A.O.U. 1957). *P. t. bacatus* is the smallest and is very dark with less white on the face and back; it is the only American race with dark bars on the outer tail feathers. The two western races are larger with more white on the back and face. *P. t. dorsalis* has the white of the back continuous, usually not broken by black bars (Ridgway 1914, Russell 1976). *P. t. fasciatus* has more distinct barring on the back and underparts (Ridgway 1914, Short 1982). The Eurasian races vary greatly from almost black-backed to essentially white-backed (Short 1982). The California bird fits *fasciatus*.

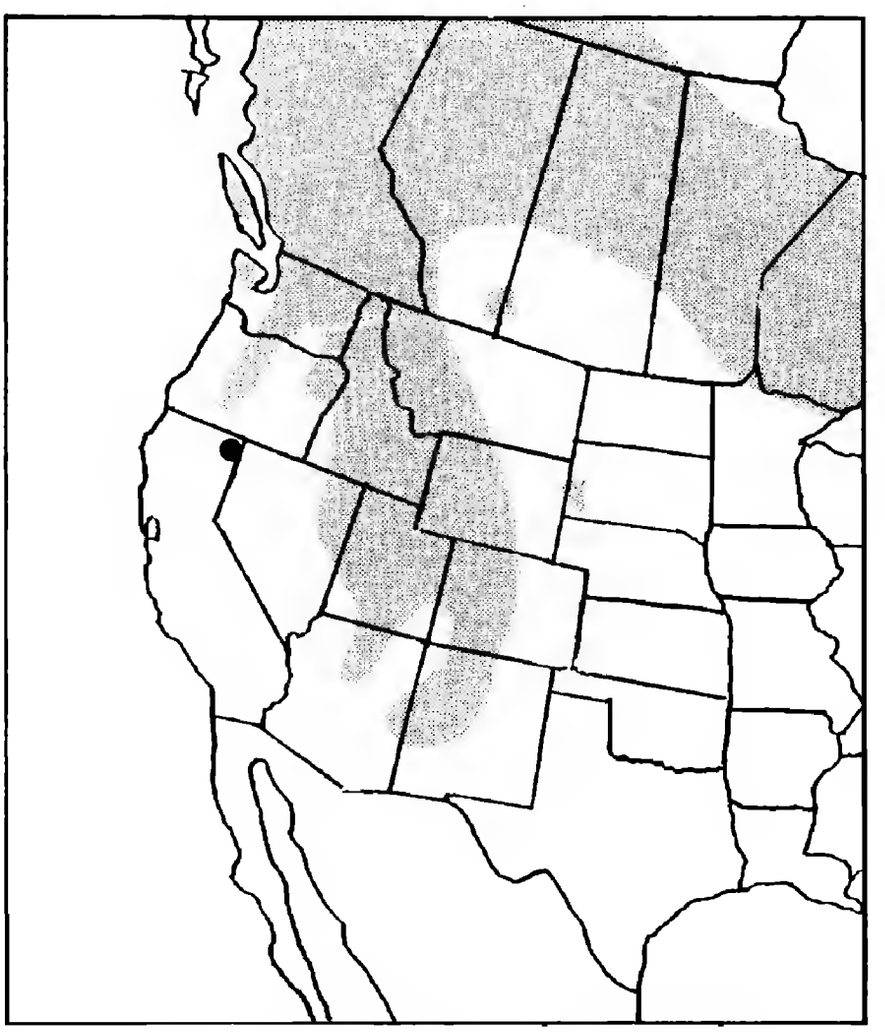


Figure 1. Approximate breeding range of the Three-toed Woodpecker (shaded) in western North America and location of the California record (dot).

IDENTIFICATION SUMMARY

In the East, some specimens of *bacatus* have only a few white or mouse-gray spots or spot-bars on the back, and a few are actually black-backed, causing confusion with the Black-backed Woodpecker (Short 1974, 1982). This problem and other variations were discussed by Russell (1973, 1974) and LaFrance (1983, 1986). Although these birds have barred outer tail feathers, unlike the white outer retrices of the Black-backed and the western races of Three-toed, these feathers are often obscured under field conditions (Short 1974). Russell (1974) further discussed a Nova Scotia specimen of the Black-backed Woodpecker with white feathers in its back. Those feathers were entirely white, unlike the white-tipped back feathers of *P. t. bacatus*. A similar *P. arcticus* with two small round white spots on its back was observed by LaFrance (pers. comm.). Extremely worn summer Black-backeds, with quills showing, may also appear to have white in the back (LaFrance 1983).

In good light, the Three-toed Woodpecker looks slightly browner and less contrastingly black and white than the Black-backed Woodpecker. The subocular white stripe of the Three-toed is narrower, and the black malar stripe broadly meets the side of the neck, whereas this stripe is more isolated on the Black-backed. On the Three-toed the loral area and forehead are mixed white and black instead of pure white. Perhaps the best mark is the line of white spots, lacking on the Black-backed, formed by the tips to the secondaries and tertials on the Three-toed, visible when the bird has its back to the observer. In the male Black-backed, the yellow cap is usually rounder and more neatly bordered with black than in the Three-toed, which usually has the cap more elongated, streaked with black, and placed slightly farther back (Short 1974, LaFrance 1983). The Three-toed might also be distinguished from the Black-backed by its smaller size and proportionately smaller bill (Short 1974, Stallcup 1985). Of course, any obviously "ladder-backed" bird is not a Black-backed Woodpecker.

Vocalizations and drumming of the two are also different, especially the call notes and rattle-like calls, which are diagnostic (Short 1974). Experience with both species is necessary to distinguish them accurately.

In the Rocky Mountains, a female Three-toed Woodpecker with an almost white back can be confused with a Hairy Woodpecker (Zimmer 1985). Throughout its North American range, the Three-toed Woodpecker is most likely to be confused with the juvenal-plumaged Hairy Woodpecker. A yellow-orange cap is common in the juvenal Hairy of both sexes. The juvenal Hairy also often has flank or back cross-barring. The Hairy Woodpecker inhabiting the Queen Charlotte Islands of British Columbia, *P. v. picoideus*, has flank and back barring even as an adult (fortunately this race is unknown away from these islands; A.O.U. 1957). The Newfoundland race of Hairy, *P. v. terraenovae*, also has back barring and flank streaking as an adult (Russell 1974), and the flanks may be streaked in some adult Hairy Woodpeckers of all races (Short 1982, George 1972, Godfrey 1986).

Hairy Woodpeckers of all ages are best distinguished from Three-toed Woodpeckers by their facial pattern. The Hairy has much broader white stripes framing the dark cheek, and the subocular white stripe expands into a large white patch on the side of the neck. On the Three-toed the stripe above the

eye is much narrower and usually curves down toward the upper back, though on a few individuals it may not extend behind the eye at all. At close range, the nasal tufts are white on Hairy and black on Three-toed (Russell 1976). Hairy Woodpeckers usually have white spotting on the wing coverts (profuse in the eastern subspecies except *terraenovae*, slight or absent in the western subspecies), which may help separate them from Three-toeds, which lack these spots.

The postjuvenal molt in the Hairy Woodpecker lasts about four months and is usually completed by mid-October (George 1972). The first basic plumage is similar to that of the adult Hairy, making identification easier once the yellow-orange cap is lost. When in doubt, count the toes.

Short (1969) described an interesting example of melanism in the Hairy Woodpecker. This bird had black barring on the back, sides, and flanks and narrow white facial stripes, all field marks of Three-toed. However, it was an adult male, with a normal red pattern on the head, and four toes. This individual was abnormal in having a white bill and large white patch on its underwing. It illustrates possible variation in common species and the need for caution in the identification of rarities.

ACKNOWLEDGMENTS

We thank CBRC members Jon L. Dunn, Louis R. Bevier, Kimball L. Garrett, Curtis Marantz, Stephen F. Bailey, Richard Stallcup, Richard A. Erickson, and Jeri M. Langham for their helpful comments in reviewing this record, and Ferdinand LaFrance for unpublished information. Rebecca Goggans and Steve Summers reviewed an earlier version of this note and provided useful comments. Tim Manolis kindly drew the sketch.

LITERATURE CITED

American Ornithologists' Union. 1957. Check-list of North American Birds. 5th ed. A.O.U., Baltimore, MD.

American Ornithologists' Union. 1983. Check-list of North American Birds. 6th ed. A.O.U., Washington, D.C.

American Ornithologists' Union. 1987. Thirty-sixth supplement to the A.O.U. Check-list of North American Birds. Auk 104:591-596.

Anderson, D. 1987. Field notes, eastern Oregon, December 1986-February 1987. Ore. Birds 13:306-311.

Bevier, L. in prep. Eleventh report of the California Bird Records Committee. W. Birds.

Binford, L. 1985. Seventh report of the California Bird Records Committee. W. Birds 16:29-48.

Bock, C., and Bock, J. 1974. On the geographic ecology and evolution of the Three-toed Woodpeckers, *Picoides tridactylus* and *P. arcticus*. Am. Midland Nat. 92:397-405.

DeSante, D., and Pyle, P. 1986. Distributional Checklist of North American Birds. Artemisia Press, Lee Vining, CA.

Gabrielson, I., and Jewett, S. 1940. Birds of Oregon. Ore. State College, Corvallis.

George, W. 1972. Age determination of Hairy and Downy Woodpeckers in eastern North America. Bird-Banding 43:128-135.

Godfrey, W. 1986. The Birds of Canada, rev. ed. Natl. Mus. Can., Ottawa.

Griffin, J., and Critchfield, W. 1972. The Distribution of Forest Trees in California. Pacific Southwest Forest and Range Exp. Sta. (USDA Forest Serv. Res. Paper PSW-82; reprinted with supplement 1976), Berkeley.

LaFrance, F. 1983. Adirondack woodpeckers in unusual plumages. Kingbird 33:165-166.

LaFrance, F. 1986. Another variant in Three-toed Woodpecker plumage. Kingbird 36:139.

Morlan, J. 1985. Eighth report of the California Bird Records Committee. W. Birds 16:105-122.

Munz, P. 1965. A California Flora. Univ. of Calif. Press, Berkeley.

Ramsey, F. 1978. Birding Oregon. Aud. Soc. of Corvallis, Corvallis, OR.

Ridgway, R. 1914. The birds of North and Middle America. Bull. U. S. Natl. Mus. 50, part 6.

Russell, W. 1973. Field identifications. Birding 5:173-177.

Russell, W. 1974. North American field identification problems. Birding 6:169-174.

Russell, W. 1976. Field identification notes. Birding 8:92-95.

Short, L. 1969. An apparently melanistic Hairy Woodpecker from New Mexico. Bird-Banding 40:145-146.

Short, L. 1974. Habits and interactions of North American Three-toed Woodpeckers (*Picoides arcticus* and *Picoides tridactylus*). Am. Mus. Novitates 2547.

Short, L. 1982. Woodpeckers of the World. Del. Mus. Nat. Hist., Monogr. Ser. 4.

Stallcup, R. 1985. Birds for Real. R. Stallcup, Inverness, CA.

Yunick, R. 1985. A review of recent irruptions of the Black-backed Woodpecker and Three-toed Woodpecker in eastern North America. J. Field Ornithol. 56:138-152.

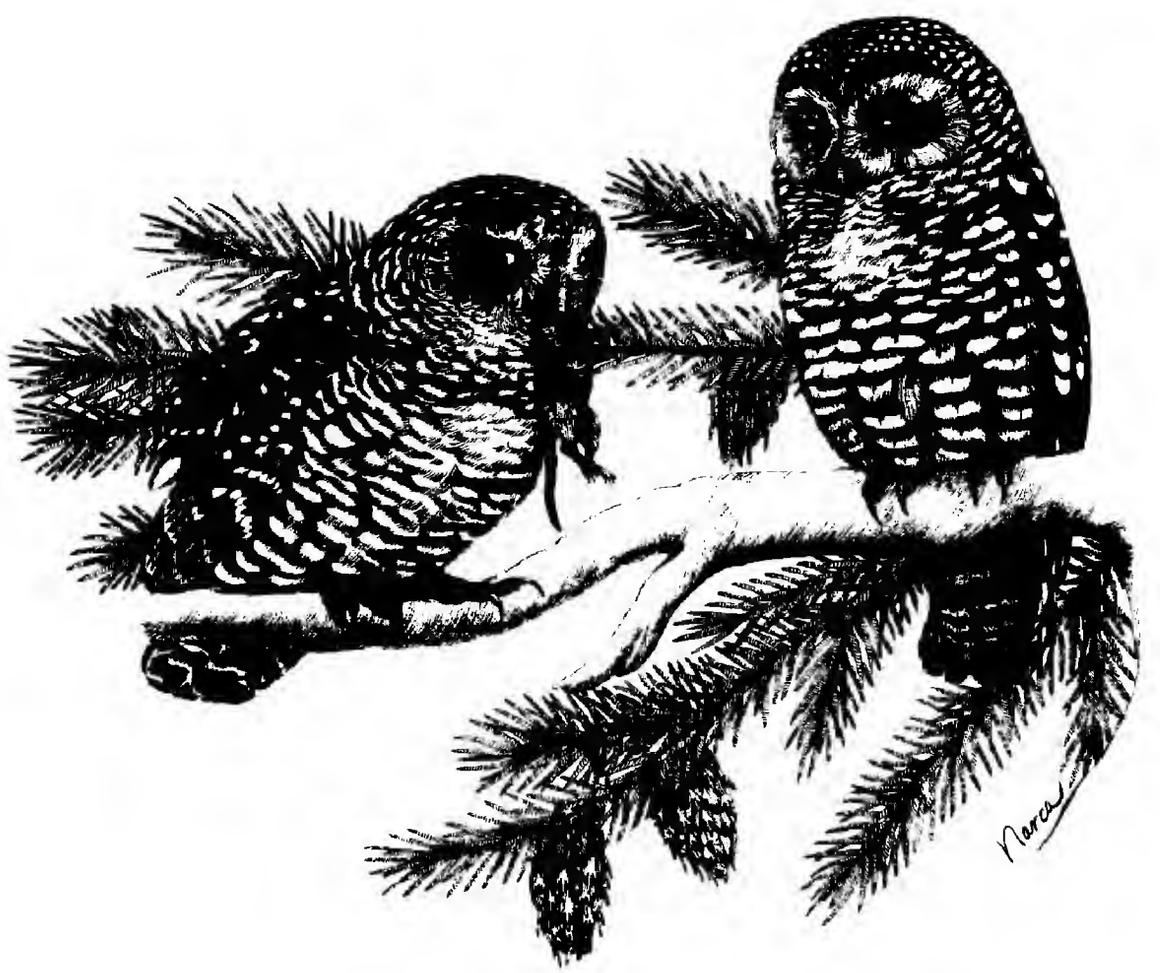
Zimmer, K. 1985. The Western Bird Watcher. Prentice Hall, Englewood Cliffs, NJ.

Accepted 30 September 1988

BIRD RECORDS COMMITTEES

Please send detailed descriptions and photographs documenting rare bird sightings to the addresses below.

Arizona: Janet Witzeman, 4619 E. Arcadia Lane, Phoenix, AZ 85018
California: Don Roberson, 282 Grove Acre Ave., Pacific Grove, CA 93950
Colorado: CFO Records Committee, Denver Museum of Natural History, City Park, Denver, CO 80205
Idaho: Dr. C.H. Trost, Department of Biological Sciences, Campus Box 8007, Idaho State University, Pocatello, ID 83209
New Mexico: John P. Hubbard, 2016 Valle Rio, Santa Fe, NM 87501
Oregon: Oregon Bird Records Committee, P.O. Box 10373, Eugene, OR 97440
Utah: Utah Ornithological Society, Ella D. Sorensen, 3868 Marsha Dr., West Valley City, UT 84120
Vancouver, British Columbia: Wayne C. Weber, 303-9153 Saturna Dr., Burnaby, B.C. V3J 7K1
Washington: Phil Mattocks, 915 E. Third Ave., Ellensburg, WA 98926



Spotted Owls *Sketch by Narca Moore-Craig*

NOTES

OBSERVATIONS ON THE NESTING SUCCESS OF BELL'S VIREOS IN SOUTHERN ARIZONA

CLARENCE F. CLARK, 2625 E. Southern-C 214, Tempe, Arizona 85282

In its notice of Rulemaking Actions proposing the listing of both the Least Bell's Vireo (*Vireo bellii pusillus*) and the Arizona Bell's Vireo (*V. b. arizonae*) as endangered species, the U. S. Fish and Wildlife Service (1980) attributed the birds' decline in California both to loss of habitat and to parasitism by Brown-headed Cowbirds (*Molothrus ater*). As I recalled my casual observations of the Arizona Bell's Vireo from 1976 to 1978, they did not indicate heavy parasitism by cowbirds. I decided to keep records of my observations of Bell's Vireo nests during my biweekly trips along the upper Santa Cruz River, Arizona, to learn more about the species' status in the area (Table 1).

Of the 24 nests I located along the Santa Cruz River between Sahuarita and Tubac from 1979 through 1981, only seven contained cowbird eggs. However, 16 nests produced 40 young vireos which were completely feathered at the time of my last observation. Four other nests had contained eggs that for some unknown reason disappeared during my observations.

I removed the cowbird egg from two of the seven parasitized nests. The remaining three vireo eggs in one nest hatched after the removal of the cowbird egg, and the young were fledged at my last visit. Two days after I removed the cowbird egg from the second nest, I found the remaining vireo eggs punctured.

A third parasitized vireo nest contained a cowbird egg with two vireo eggs. On the second day after I found the nest, the cowbird egg was raised from the bottom of the nest to the rim, where it was lodged in the nest material. The cowbird egg later disappeared from the rim of the nest, the two vireo eggs hatched, and the vireos grew to fledglings.

A fourth nest contained two vireo eggs and a cowbird egg when I found it. Two days later, the cowbird egg was gone, but a third vireo egg was present. A brood of three vireos fledged from the nest.

I found two of the parasitized nests after the cowbird eggs had hatched, and no vireo eggs or nestlings remained. In the seventh nest, I observed the nestling cowbird deliberately or accidentally pushing a young vireo out of the nest. I later observed the fledgling cowbird leave the nest when it was disturbed.

Two nests of four vireo eggs hatched, but each contained a runt. I observed one runt being pushed out of one nest by the other vireos. The runt from the second nest was found lying dead on the ground below the nest.

In southern California, Wilbur (1979) reported observing parasitism of seven of 14 nests, of which three failed. Goldwasser et al. (1980) found the failure of 33% of Bell's vireo nests in one study to be due to cowbird parasitism. Serena (1986) stated that at least five of nine vireo nests found along the lower Colorado River had been parasitized by cowbirds. She wrote "from these data it seems fair to conclude that cowbirds are effectively reducing vireo nesting success, even in areas of low cowbird densities."

Hunter (1984) reported on his studies of nine species of birds occurring in the riparian habitat along the lower Colorado River, in southeastern California, and considered to be in danger of extirpation in the area. He found that "the same trends in population decline seen in Bell's Vireos and Yellow Warblers also are seen in Yellow-billed Cuckoos, Vermilion Flycatchers and Summer Tanagers. The latter three species are not heavily parasitized by

Table 1 Bell's Vireo Nesting Success in the Upper Santa Cruz River Valley, Arizona

Date nest found	Bell's Vireo			Brown-headed Cowbird			Notes
	Eggs	Young hatched	Young fledged	Eggs	Young hatched	Young fledged	
24 Apr 1979	4	3	3	0	0	0	
4 May 1979	4	4	0	0	0	0	
8 May 1979	3	3	0	0	0	0	
11 May 1979	0	0	0	1	1	0	No vireo eggs in the nest when found.
14 May 1979	3	3	2	0	0	0	
4 Jun 1979	3	2	0	1	0	0	I removed the cowbird egg. Two days later the vireo eggs were punctured.
21 Aug 1979	4	4	4	0	0	0	Young fledged when the nest was found.
14 May 1980	3	3	2	0	0	0	
16 May 1980	4	0	0	0	0	0	
20 May 1980	3	3	3	1	0	0	The cowbird egg disappeared before the third vireo egg was laid.
28 May 1980	3	3	3	0	0	0	
1 Jun 1980	3	3	2	1	0	0	

Date nest found	Bell's Vireo			Brown-headed Cowbird			Notes
	Eggs	Young hatched	Young fledged	Eggs	Young hatched	Young fledged	
5 Jun 1980	2	2	2	1	0	0	The cowbird egg was raised to the rim of the nest and later disappeared.
7 Jun 1980	3	3	3	1	0	0	I removed the cowbird egg and later watched the fledged vireos leave the nest.
9 Jun 1980	2	2	2	0	0	0	
13 Jun 1980	4	4	3	0	0	0	
30 Apr 1981	3	3	3	0	0	0	
14 May 1981	0	0	0	1	1	1	One cowbird egg but no vireo eggs were in the nest when it was found.
16 May 1981	4	3	2	0	0	0	
21 May 1981	4	0	0	0	0	0	
13 Jun 1981	4	4	3	0	0	0	A runt disappeared before fledging.
16 Jun 1981	4	3	1	0	0	0	
23 Jun 1981	4	3	2	0	0	0	

cowbirds." My casual observations from 1979 through 1981 suggest that the majority of the parasitized nests I found were in less dense foliage such as mesquite, and the most successful ones were in fence-row thickets and elderberry.

In my study, I found 24 nests containing 70 vireo eggs, of which 84% hatched and 59.9% fledged. Seven of the 24 nests were parasitized with cowbird eggs (30%), one egg per nest. Two (8%) of the parasitized nests produced one cowbird nestling each, of which only one fledged.

LITERATURE CITED

Goldwasser, S., Gaines, D., and Wilbur, S. R. 1980. The Least Vireo in California: A *de facto* endangered race. Am. Birds 34:742-745.

Hunter, W. C. 1984. Status of nine bird species of special concern along the Colorado River. Calif. Dept. Fish and Game, Nongame Wildlife Invest., Wildlife Branch Admin. Rept. 84-2:1—63.

Serena, M. 1986. Distribution, habitat preferences, and reproductive success of Arizona Bell's vireo (*Vireo bellii arizonae*) along the lower Colorado River. Calif. Dept. Fish and Game, Nongame Wildlife Invest., Project E W-5, Final Rept., Job IV-38-1:1-17.

U. S. Fish and Wildlife Service 1980. Rulemaking Actions. February 1980. U. S. Dept. Interior, Fish and Wildlife Serv. Endangered Species Tech. Bull. V (3):11.

Accepted 25 June 1988

SUPPOSED NORTHERN RECORDS OF THE SOUTHERN FULMAR

RICHARD C. BANKS, National Ecology Research Center, U.S. Fish and Wildlife Service; National Museum of Natural History, Washington, D.C. 20560

The Southern or Slender-billed Fulmar, *Fulmarus glacialoides*, has variously been on primary (American Ornithologists' Union [A. O. U.] 1910, 1983) or hypothetical (A. O. U. 1931, 1957) lists of North American birds. Its fluctuating status results both from acceptance versus rejection of particular records and from recent expansion of the A. O. U. check-list's geographic coverage to include Mexico and Central America. [One searching those lists will note that the bird has been treated also in the genus *Priocella* and under the specific name *antarctica*.] This breeding species of the antarctic continent and far southern islands ranges northward in its nonbreeding season to about 40°S (Jouanin and Mougin 1979) or to the northern end of the Humboldt Current at about 6°S (Murphy 1936:598). Murphy (1936) noted that there are more records of this species in the North Pacific than of any other southern petrel, presumably alluding to the several reports from the west coast of North America. Bourne (1967:150-151), however, rejected all northern hemisphere records; of the three that he discussed, none seemed "remotely acceptable." There are actually six reports of this antarctic species in the northwest Pacific, i.e., from the west coast of North America. The evidence for or against some of them has not previously been discussed, and never have they been considered together.

The first North Pacific record, of a bird collected by J. K. Townsend supposedly off Oregon, within a day's sail of the mouth of the Columbia River, was reported by Audubon (1839) under the name *Procellaria tenuirostris*. This record was long accepted (A. O. U. 1910) but eventually was shown to be probably erroneous by Stone (1930). According to Stone, "Townsend had no clear idea of the identity of the various species of Tubinares nor of where he secured the several specimens" that he sent to Audubon. Townsend had ample opportunity to collect the Southern Fulmar during a prolonged stay in Chile, and probably he did not label his specimens. On this basis, the Southern Fulmar was transferred to the hypothetical list by the A. O. U. (1931, 1957). This "Columbia River" specimen is apparently also the basis for early statements that the species ranged north along the Pacific coast to Washington (A. O. U. 1895) or Washington Territory (see Jewett et al. 1953:671). The specimen is presently in the National Museum of Natural History (USNM 2032), having come from Audubon through Spencer F. Baird. There are no data on the earliest label, which is Baird's.

Cassin (1858:410) wrote that the only specimen of *Procellaria tenuirostris* taken by the Wilkes [U.S.] Exploring Expedition (of 1838-1842) "is labelled as having been obtained on the coast of Oregon." This report was repeated by Baird et al. (1884:374). However, the catalog of specimens taken on that expedition (Cassin 1858:452) lists no *P. tenuirostris* but does mention a *P. glacialoides* from the "Atlantic Ocean"; the latter species or specimen is not included in any account in the main text. Peale's (1848:338) earlier catalog of the Exploring Expedition's specimens similarly listed a single *P. glacialoides*, but gave the locality as the "South Pacific Ocean." The one specimen of *Fulmarus glacialoides* from the U.S. Exploring Expedition now in the National Museum of Natural History (USNM 15439) has no original label; the present label bears the locality "Atlantic O."

Loomis (1918:90) attempted to verify the U. S. Exploring Expedition's specimen from Oregon, without success. He was told that the specimen, USNM 15707, was no longer in the collection. However, USNM 15707 and 15439 seem to be duplicate entries for the same specimen, albeit with different original identifications and localities; both have the "original number" given as "757." Unfortunately, this confusion regarding the origin of the Exploring Expedition's specimens is not uncommon. The true

provenance of this specimen remains unknown, but there is no evidence that it was the coast of Oregon.

J. G. Cooper found a skeleton on [Santa] Catalina Island, California, in June, 1863, that he ascribed to this species (Baird et al. 1884:374). Cooper (1887) also attributed that specimen to Ventura County, California, accounting for the apparently separate occurrence noted by Willett (1912). No basis for Cooper's identification of the skeleton was ever given, and the depository for the specimen was never stated. The species was placed on hypothetical lists by Willett (1912), Grinnell (1915), and Howell (1917). Grinnell and Miller (1944:557) further suggested that Cooper "misidentified or confused" some of the shearwaters with which he reportedly saw this species along the California coast. None of Cooper's reports can be verified.

A record of this species from Kotzebue Sound, Alaska (Nelson 1883), listed as *Priocella tenuirostris*, was shown to be based on a misidentification of *Puffinus tenuirostris* (Stejneger 1884), then called the Slender-billed Shearwater. This error resulted more from confusion of the names than from actual misidentification (Nelson 1887:63).

Coues (1903:1030) listed Vancouver Island, British Columbia, as the northern limit of *F. glacialoides* on the Pacific coast, without reference. This record is not mentioned elsewhere, to my knowledge. Fannin (1898) recorded a specimen of *Puffinus tenuirostris* taken near Victoria, Vancouver Island, in 1891, which may, by a slip similar to Nelson's, have been the basis for Coues' listing.

The most persistent northern hemisphere record of the Southern Fulmar is from Mazatlan, Sinaloa, Mexico, and is based on a specimen in the British Museum (Natural History) from the Salvin-Godman collection (Salvin 1896). The specimen from Mazatlan formed the basis for Salvin and Godman's (1904) description of the species and was also the model for the plate in Godman's (1908:165, pl. 43) monograph of the petrels. Nonetheless, those authors did not provide any additional information about the specimen or its occurrence so far out of range. Although they recognized the antarctic nature of the species, the reports accepted then from even farther north—to "Washington Territory," based on Townsend's specimen and perhaps other records (Baird et al. 1884)—undoubtedly persuaded them that the Mazatlan record was not exceptional. This record is the basis for inclusion of the species by Friedmann et al. (1950) and in the main list of the sixth edition of the A. O. U. Check-list (A. O. U. 1983).

Bourne (1967:150-151) noted that the Salvin-Godman specimen had been listed, without any other data, in the British Museum catalog, but he could not trace it. The specimen is still in the British Museum (Natural History), catalogued as 1888-5-18-94, and is properly identified as *Fulmarus glacialoides* (*fide* Alan Knox). There is no original collector's label, but the specimen bears a label of "Maison Verreaux," whence Salvin and Godman must have obtained it. According to Sharpe (1906:503), "The Maison Verreaux was one of the greatest, if not the greatest, emporium of natural history that the world has ever seen. . . . The specimens were often issued without any exact indication of locality, but had attached to them in Jules' [Verreaux] handwriting a large label giving the synonymy from Bonaparte's 'Conspectus'. . . ." This is the situation with the present specimen. The Verreaux brothers received specimens from the world over. The added handwritten locality "Mazatlan" and probably the sex symbol (for male) cannot be considered definitive, and this record is not acceptable.

In summary, none of the records of *Fulmarus glacialoides* off the Pacific coast of North America can be considered valid. Uncritical acceptance of the earliest reports made subsequent reports seem equally acceptable. Dubious localities were not questioned, and birds of similar name were confused. The Southern Fulmar should appear only as hypothetical on lists of North American birds.

I thank Alan Knox of the British Museum (Natural History) for providing information on the Salvin-Godman specimen in that collection and M. Ralph Browning for technical support. W. Earl Godfrey, Burt L. Monroe, and Robert W. Storer commented on the manuscript, and Joseph Morlan made important contributions as a referee.

LITERATURE CITED

American Ornithologists' Union. 1895. Check-list of North American Birds. 2nd ed. Am. Ornithol. Union, New York.

American Ornithologists' Union. 1910. Check-list of North American Birds. 3rd ed. Am. Ornithol. Union, New York.

American Ornithologists' Union. 1931. Check-list of North American Birds. 4th ed. Am. Ornithol. Union, Lancaster

American Ornithologists' Union. 1957. Check-list of North American Birds. 5th ed. Am. Ornithol. Union, Baltimore.

American Ornithologists' Union. 1983. Check-list of North American Birds. 6th ed. Am. Ornithol. Union, Washington, D.C.

Audubon, J. J. 1839. Ornithological Biography. Vol. 5. Adam & Charles Black, Edinburgh.

Baird, S. F., Brewer, T. M., and Ridgway, R. 1884. The water birds of North America. Vol. 2. Mem. Mus. Comp. Zool. 12.

Bourne, W. R. P. 1967. Long-distance vagrancy in the petrels. Ibis 109:141-167.

Cassin, J. 1858. United States Exploring Expedition. Mammalogy and Ornithology. Lippincott, Philadelphia.

Cooper, J. G. 1887. Additions to the birds of Ventura County, California. Auk 4:85-94.

Coues, E. 1903. Key to North American Birds. 5th ed. Dana Estes, Boston.

Fannin, J. 1898. Check list of British Columbia birds, in A Preliminary Catalogue of the Collections of Natural History and Ethnology in the Provincial Museum, Victoria, British Columbia, pp. 15-55. Provincial Museum, Victoria, B.C.

Friedmann, H., Griscom, L., and Moore, R. T. 1957. Distributional check-list of the birds of Mexico. Pac. Coast Avifauna 29.

Godman, F. D. 1908. A monograph of the petrels. Pt. 3. Witherby, London.

Grinnell, J. 1915. A distributional list of the birds of California. Pac. Coast Avifauna 11.

Grinnell, J., and Miller, A. H. 1944. The distribution of the birds of California. Pac. Coast Avifauna 27.

Howell, A. B. 1917. Birds of the islands off the coast of southern California. Pac. Coast Avifauna 12.

Jewett, S. G., Taylor, W. P., Shaw, W. T., and Aldrich, J. W. 1953. Birds of Washington State. Univ. Washington Press, Seattle.

Jouanin, C., and Mougin, J.-L. 1979. Order Procellariiformes, in Check-list of Birds of the World. Vol. 1, 2nd ed. (E. Mayr and G. W. Cottrell, eds.), pp. 48-121. Mus. Comp. Zool., Cambridge, MA.

Loomis, L. M. 1918. A review of the albatrosses, petrels, and diving petrels. Proc. Calif. Acad. Sci., 4th ser., vol. 2, pt. 2, no. 12.

Murphy, R. C. 1936. Oceanic birds of South America. Vol. 1. Am. Mus. Nat. Hist., New York.

Nelson, E. W. 1883. Birds of Bering Sea and the Arctic Ocean, in Cruise of the Revenue-Steamer *Corwin* in Alaska and the N.W. Arctic Ocean in 1881, pp. 55-118. Government Printing Office, Washington, D.C.

Nelson, E. W. 1887. Report upon Natural History Collections Made in Alaska between the Years 1877 and 1881. Government Printing Office, Washington, D.C.

Peale, T. R. 1848. United States Exploring Expedition. Mammalia and Ornithology. C. Sherman, Philadelphia.

Salvin, O. 1896. Tubinares, in Catalogue of the Gaviae and Tubinares in the Collection of the British Museum, by H. Saunders and O. Salvin. British Museum (Natural History), London.

Salvin, O., and Godman, F. D. 1904. Biologia Centrali-Americana. Aves. Vol. 3, sig. 55. London.

Sharpe, R. B. 1906. Birds, in The History of the Collections Contained in the Natural History Departments of the British Museum. Vol. 2, pp. 79-115. British Museum, London.

Stejneger, L. 1884. Analecta ornithologica. Auk 1:225-236.

Stone, W. 1930. Townsend's Oregon tubinares. Auk 47:414-415.

Willett, G. 1912. Birds of the Pacific slope of southern California. Pac. Coast Avifauna 7.

Accepted 24 June 1988

FIRST REPORT OF NESTING RING-BILLED GULLS IN NEVADA

ALAN A. GUBANICH, Department of Biology, University of Nevada, Reno, Nevada 89557

HUGH JUDD, 2325 Jessie, Sparks, Nevada 89431

The Ring-billed Gull (*Larus delawarensis*) is a common winter resident throughout Nevada but is not known to breed in the state (Conover 1983, Ryser 1985). According to the A.O.U. Check-list (1983) the breeding range of the Ring-billed Gull in western North America extends from the northwestern United States and prairie regions of Canada south to northeastern California (Honey Lake), south-central Idaho, south-central Colorado, southeastern Wyoming, and northeastern South Dakota (Waubay Lake). In this note we report the discovery of the first known breeding colony of Ring-billed Gulls in Nevada, at Lake Lahontan in the northwestern part of the state.

Lahontan Dam and Reservoir (commonly called Lake Lahontan) are located about 11 km west of Fallon in Lyon and Churchill counties. At an elevation of 1268 m, the lake is surrounded by Big Sagebrush (*Artemisia tridentata*) habitat and covers about 4000 hectares when full.

For many years California Gulls (*Larus californicus*) have nested at Lake Lahontan on Gull Island (39° 26′ N, 119° 04′ W), at the northwestern end of the lake, 2.4 km south of the dam, Churchill County. Information is lacking on the colony's date of establishment; Conover (1983) did not list it as active before 1930. Gull Island is small (0.52 ha) and rocky, sloping gently on all sides to a height of about 2.4 m above the water. Fremont Cottonwoods (*Populus fremonti*) and tamarisks (*Tamarix* sp.) line the northern and eastern shores. Greasewood (*Sarcobatus vermiculatus*), Shadscale (*Atriplex confertifolia*), and Poverty Weed (*Iva axillaris*) occur at scattered locations across the rest of the island.

In May 1983 Judd found an estimated 200 pairs of Ring-billed Gulls nesting on Gull Island, at the northeastern periphery of the California Gull colony, under and near the edges of the tamarisks. The nests were on bare ground. Similar numbers were seen in 1984 and 1985, again at the edge of the California Gull colony. The California Gulls numbered about 4000 pairs each year. In 1986 and 1987 we visited Gull Island and found only California Gulls nesting there. The Ring-billed Gulls had established their own colony on nearby Walleye Island, 0.4 km to the northeast, Churchill County, and nested there both years.

Walleye Island is small (0.94 ha) and rocky, with a maximum height of 2.4 m above the water's surface. Fremont Cottonwoods and tamarisks border the entire island at the shorelines. Dominant vegetation includes Shadscale and Halogeton (*Halogeton glomeratus*) with some scattered rabbitbrush (*Chrysothamnus viscidiflorus*) and milkweed (*Asclepias fascicularis*).

Approximately 1000 pairs of Ring-billed Gulls nested on Walleye Island in 1986. In 1987 the number had increased to an estimated 1500 to 2000 nesting pairs. In both years the center of the colony was occupied by about 100 nesting pairs of California Gulls.

In 1987 we visited both colonies 10 times between 6 April and 11 July. We did not determine nesting success but noted general features of the nesting cycle. Throughout the 1987 season Ring-billed Gulls were about 1 week behind the California Gulls in all stages of nesting.

On 6 April large numbers of gulls were present on both islands, but no nests or eggs were seen. On 19 April California Gulls were laying eggs on Gull Island, but Ring-billed Gull eggs were not seen on Walleye Island until our next visit on 25 April. Most Ring-billed Gulls seemed to have completed their clutches by 9 May; average clutch

size (mean ± one standard deviation) that day was 2.91 ± 0.35 (range = 1 to 4 eggs; n = 102 nests).

Ring-billed Gull chicks were present when we visited on 30 May. By 13 June many of the Ring-billed Gull chicks were old enough to run into the water upon our approach. On our last visit on 11 July parents and young of both species were still present on both islands. All young were in juvenal plumage, and most were capable of flight.

Ring-billed Gulls have increased their breeding populations in recent years in the Great Lakes region (Lugwig 1974) and in several western states (Conover et al. 1979, Conover and Conover 1981, Conover 1983). The Nevada colony seems to be part of that trend, and the colony itself seems to be in a state of expansion. It increased from 200 pairs on Gull Island in 1983 to almost 2000 pairs on Walleye Island in 1987. It is not known whether Ring-billed Gulls nested on Gull Island prior to 1983, and no gulls were ever known to nest on Walleye Island until 1986. Whether the colony will continue to increase in numbers remains to be seen. The entire northeastern half of Walleye Island is available for expansion, but human disturbances are a constant threat. Lake Lahontan is designated a Nevada State Recreation Area and is heavily used by the public; indiscriminate shooting by humans and nest destruction by domestic dogs have been known to occur.

The nearest known nesting colony of Ring-billed Gulls is at Honey Lake (Harston Reservoir), Lassen County, California (Moffitt 1942, Conover 1983, Ryser 1985), about 160 km to the northwest. Other nearby colonies are in northern California near the Oregon border (Clear Lake and Goose Lake, Modoc County, and Lower Klamath Lake, Siskyou County; Conover 1983). The closest known nesting colonies of California Gulls are both in Nevada: Anahoe Island in Pyramid Lake, Washoe County, 72 km to the northwest, and Virginia Lake, Reno, Washoe County, 70 km to the west (Conover 1983). However, to date no Ring-billed Gulls have been reported breeding among these colonies.

The Nevada Ring-billed Gull colony is apparently the southernmost one known today. The A.O.U. Check-list (1983) mentions a breeding locality in south-central Colorado, but that colony is no longer active. Ring-billed Gulls bred in Colorado at San Luis Lakes in 1898 (Cooke 1915), but Ryder (1978) found no recent nestings of the species in that state. Similarly, Findholt (1986) reported that the Ring-billed Gull nests in Idaho, Montana, and South Dakota but not in any of the other states that adjoin Wyoming. Thus, we know of no other Ring-billed Gull colony farther south than the Lake Lahontan colony.

We thank M. Conover and an anonymous reviewer for helpful comments on the manuscript.

LITERATURE CITED

American Ornithologists' Union. 1983. Check-list of North American Birds. 6th ed. Am. Ornithol. Union, [Washington, D.C.].

Conover, M.R. 1983. Recent changes in Ring-billed and California gull populations in the western United States. Wilson Bull. 95:362-383.

Conover, M.R., and Conover, D. 1981. A documented history of Ring-billed and California gull colonies in the western U.S. Colonial Waterbirds 4:37-43.

Conover, M.R., Thompson, B.C., Fitzner, R.E., and Miller, D.E. 1979. Increasing populations of Ring-billed and California gulls in Washington State. W. Birds 10:31-36.

Cooke, W.W. 1915. Distribution and migration of North American gulls and their allies. U.S. Dept. Agric. Bull. 292.

Findholt, S.L. 1986. The Ring-billed Gull: A rediscovered nesting species in Wyoming. W. Birds 17:189-190.

Ludwig, J.P. 1974. Recent changes in the Ring-billed Gull population and biology in the Laurentian Great Lakes. Auk 91:575-594.

Moffitt, J. 1942. A nesting colony of Ring-billed Gulls in California. Condor 44:105-107.

Ryder, R.A. 1978. Gulls in Colorado: Their distribution, status and movements. 1977 Conf. Colonial Waterbird Group 1:3-9.

Ryser, F.A. 1985. Birds of the Great Basin. Univ. of Nevada Press, Reno.

Accepted 16 July 1988

Ring-billed Gull *Sketch by Eric Lichtwardt*

Volume 19, Number 3, 1988

Biology of the Black-vented Shearwater *William T. Everett* 89

An Increasing White-faced Ibis Population in Oregon
Gary L. Ivey, Mark A. Stern, and Christopher G. Carey 105

First Record of the Three-toed Woodpecker in California
John Trochet, Joseph Morlan, and Don Roberson 109

NOTES

Observations on the Nesting Success of Bell's Vireos in Southern Arizona *Clarence F. Clark* 117

Supposed Northern Records of the Southern Fulmar
Richard C. Banks 121

First Report of Nesting Ring-billed Gulls in Nevada
Alan A. Gubanich and Hugh Judd 125

BULLETIN BOARD 128

Cover photo by © Cecil Smith of Citrus Heights, California: Clapper Rail (*Rallus longirostris*), Palo Alto, California, December 20, 1983.

Western Birds solicits papers that are both useful to and understandable by amateur field ornithologists and also contribute significantly to scientific literature. The journal welcomes contributions from both professionals and amateurs. Appropriate topics include distribution, migration, status, identification, geographic variation, conservation, behavior, ecology, population dynamics, habitat requirements, the effects of pollution, and techniques for censusing, sound recording, and photographing birds in the field. Papers of general interest will be considered regardless of their geographic origin, but particularly desired are reports of studies done in or bearing on the Rocky Mountain and Pacific states and provinces, including Alaska and Hawaii, western Texas, northwestern Mexico, and the northeastern Pacific Ocean.

Send manuscripts to Philip Unitt, 3411 Felton Street, San Diego, CA 92104. For matter of style consult the *Suggestions to Contributors to Western Birds* (8 pages available at no cost from the editor) and the *Council of Biology Editors Style Manual* (available for $24 from the Council of Biology Editors, Inc., 9650 Rockville Pike, Bethesda, MD 20814.

Reprints can be ordered at author's expense from the Editor when proof is returned or earlier.

Good photographs of rare and unusual birds, unaccompanied by an article but with caption including species, date, locality and other pertinent information, are wanted for publication in *Western Birds*. Submit photos and captions to Photo Editor.

WESTERN BIRDS

Vol. 19, No. 4, 1988

WESTERN BIRDS

Quarterly Journal of Western Field Ornithologists

President: Tim Manolis, 808 El Encino Way, Sacramento, CA 95864

Vice-President: Narca A. Moore-Craig, P.O. Box 254, Lakeview, CA 92353

Treasurer/Membership Secretary: Howard L. Cogswell, 1548 East Avenue, Hayward, CA 94541

Recording Secretary: Jean-Marie Spoelman, 4629 Diaz Drive, Fremont, CA 94536

Circulation Manager: Jerry R. Oldenettel, 4368 37th Street, San Diego, CA 92105

Directors: Peter Gent, Virginia P. Johnson, John S. Luther, Guy McCaskie, Timothy Manolis, Robert McKernan, Narca Moore-Craig, Joseph Morlan, Janet Witzeman

Editor: Philip Unitt, 3411 Felton Street, San Diego, CA 92104

Associate Editors: Cameron Barrows, Tim Manolis, Narca A. Moore-Craig, Thomas W. Keeney

Layout Artist: Virginia P. Johnson

Photo Editor: Bruce Webb, 5657 Cazadero, Sacramento, CA 95822

Review Editor: Richard E. Webster, 1114 Oneonta Dr., Los Angeles, CA 90065

Secretary, California Bird Records Committee: Don Roberson, 282 Grove Acre Ave., Pacific Grove, CA 93950

Editorial Board: Robert Andrews, Alan Baldridge, Andrew J. Berger, Laurence C. Binford, David F. DeSante, Jon L. Dunn, Richard Erickson, Kimball L. Garrett, Joseph R. Jehl, Jr., Ned K. Johnson, Virginia P. Johnson, Brina Kessel, Stephen A. Laymon, Paul Lehman, John S. Luther, Guy McCaskie, Joseph Morlan, Harry B. Nehls, Dennis R. Paulson, Stephen M. Russell, Oliver K. Scott, Ella Sorensen, Richard W. Stallcup, Charles Trost, Terence R. Wahl, Roland H. Wauer, Bruce Webb, Wayne C. Weber, Richard E. Webster

Membership dues, for individuals and institutions, including subscription to *Western Birds:* Patron, $1000; Life, $250; Supporting, $50 annually; Contributing, $25 annually; Regular, $14 U.S. ($17 outside U.S.) annually. Dues and contributions are tax-deductible to the extent allowed by law.

Send membership dues, changes of address, correspondence regarding missing issues, and orders for back issues and special publications to the Treasurer. Make checks payable to Western Field Ornithologists.

Back issues of *California Birds/Western Birds:* $15 per volume, $4.00 for single issues. Xerox copies of out of print issues (Vol. 1, No. 1; Vol. 2, Nos. 1 and 4; Vol. 6, No. 2): $4.50 each. *Checklist of the Birds of California:* $2.00 each, 10 or more $1.50 each. *Pelagic Birds of Monterey Bay, California:* $2.50 each, 10 or more $2.00 each, 40 or more $1.50 each. All postpaid.

Published April 25, 1989 ISSN 0045-3897

WESTERN BIRDS ADVERTISING RATES AND SPECIFICATIONS

Full page	4 x 6¾ inches	$60 per issue	$200 per year
Half Page	4 x 3⅜ inches	$40 per issue	$130 per year
Quarter Page	4 x 1 11/16 inches	$30 per issue	$110 per year

Offset printing, one column per page, 4 inches wide. Glossy, black and white photos are acceptable; half-tone screen size: 133 line. Photo-ready copy is requested. If this is not possible, extra charges for typesetting will be made as follows: $15 full page, $10 half page, $5 quarter page. Send copy with remittance to the Treasurer. Make checks payable to Western Field Ornithologists. A 15% commission is allowed for agencies.

WESTERN BIRDS

Volume 19, Number 4, 1988

TENTH REPORT OF THE CALIFORNIA BIRD RECORDS COMMITTEE

JON L. DUNN, 4710 Dexter Dr., #7, Santa Barbara, California 93110

Western Field Ornithologists and the California Bird Records Committee are again pleased to thank ***Bushnell Corporation*** *for its continued support. Bushnell has again been generous in sponsoring the publication of this report, including the printing of color photographs.*

This, the tenth report of the California Bird Records Committee (hereafter the CBRC or the Committee), contains 195 accepted records of 77 species and 17 unaccepted records of 15 species. These numbers represent an acceptance rate of 92%, which is slightly higher than the rates of 88.7% in the ninth report (Roberson 1986) and 88.4% in the eighth report (Morlan 1985). In addition, the CBRC accepted for statistical purposes 17 records of the Yellow Rail that were cited by Grinnell and Miller (1944), even though they were not formally reviewed. One hundred and nineteen observers contributed descriptions or photographs of the birds in this report, for which the Committee is most grateful.

Owing mainly to the efforts of the Secretary, Don Roberson, the Committee is now making steady progress in reviewing older records. These include many specimen records, the majority of which were published in *The Auk* and *The Condor* and some of which were cited by Grinnell and Miller (1944). All such records accepted herein were reviewed via photos of the specimens, and often important measurements were independently taken. Old records have also come from the field notes of several observers, notably Laidlaw Williams and Guy McCaskie, and from the files of the Middle Pacific Coast Region of *American Birds* (hereafter abbreviated *AB*) and its predecessor *Audubon Field Notes* (*AFN*). Most of these reports have long been considered valid by other authors, and their publication here simply marks their formal CBRC acceptance under a formal record number. The process of reviewing historical records continues and should largely be completed with the publication of the thirteenth report (in prep.). The Committee

has now evaluated about 80% of all known records of review-listed species. We welcome documentation of unreviewed past records.

State list. This report adds two species to our California state list: American Black Duck and Brown Shrike. The state list now totals 563 species following these additions and the A.O.U. decision to recognize once again the Yellow-green Vireo (*Vireo flavoviridis*) at the species level (A.O.U. 1987). This species is casual in the fall along the California coast and is on the Review List. The CBRC has published a state list (California Bird Records Committee 1987; available from the Committee Secretary or the Circulation Manager for $1.00 postpaid) that updates its next most recent compilation (Binford 1986).

Review list. The list of species and species complexes we review has remained fairly stable over recent years, and a decision at the 1987 annual meeting may make it even more so. The Committee decided to stop reviewing records of species that have (or had) a small permanent resident population in the state. Thus Harris' Hawk and Sharp-tailed Grouse, whose resident populations have been extirpated, are no longer reviewed, nor will claims of the California Condor, no longer occurring in the wild, be evaluated. The Northern Cardinal was removed from the Review List as well, as a small permanent population has existed (though now in much reduced numbers) along the Colorado River since 1945 (the Committee has not yet considered whether the small introduced population in eastern Los Angeles County is viable, but will review the status of that population if evidence is submitted to suggest it is an established population under its criteria). On a much closer vote (7-3, the minimum needed to make a Review List change) the Sharp-tailed Sparrow was deleted from the Review List. It regularly winters in small numbers at a few favored coastal *Salicornia* marshes (Bolinas Lagoon, MRN, and Palo Alto, SCL, are examples) with individuals occasionally occurring elsewhere.

In 1987, the Committee voted to add the Blue-footed Booby (post-1972 records only) and Roseate Spoonbill (post-1977 records only) to the Review List; these years were after the last major incursions of these erratic species in California. All records of these species before our chosen cut-off date have been well summarized, for the booby by McCaskie (1970a), and for the spoonbill by Roberson (1980) and Garrett and Dunn (1981). In 1988, the Committee voted (7-3) to add *Pterodroma* petrels of the subgenus *Cookilaria* to the Review List. Observers are urged to indicate which members of this subgenus they deem eliminated by observation when submitting records of *Cookilaria*. For the most part, we expect to be reviewing members of the *P. cooki/defilippiana/longirostris/pycrofti* subset.

In general, our Review List includes species that average four or fewer records per year over the most recent ten-year period. The Committee solicits reports of the following: Yellow-billed Loon; Least Grebe; Wandering and Short-tailed Albatrosses (post-1900); Mottled, Cook's, and Stejneger's Petrel and *Cookilaria* petrels; Streaked and Greater Shearwaters; Wilson's, Band-rumped, and Wedge-rumped Storm-Petrels; White-tailed and Red-tailed Tropicbirds; Masked, Blue-footed (post-1972), Brown, and Red-footed Boobies; Olivaceous Cormorant; Anhinga; Reddish Egret; Yellow-crowned Night-Heron; White Ibis; Roseate Spoonbill (post-1977); Black-

bellied Whistling-Duck; Whooper and Trumpeter Swans; Emperor Goose; Baikal Teal; American Black Duck; Garganey; Tufted Duck; King and Steller's Eiders; Smew; Mississippi Kite; Common Black-Hawk; Zone-tailed Hawk; Gyrfalcon; Yellow Rail; Purple Gallinule; Mongolian, Wilson's, and Piping Plovers; Eurasian Dotterel; American Oystercatcher; Spotted Redshank; Gray-tailed Tattler; Upland Sandpiper; Little Curlew; Hudsonian and Bar-tailed Godwits; Rufous-necked and Little Stints; White-rumped, Curlew, and Buff-breasted Sandpipers; Jack Snipe; Little, Common Black-headed, and Lesser Black-backed Gulls; Sandwich and Sooty Terns; Thick-billed Murre; Kittlitz's Murrelet; Parakeet, Least, and Crested Auklets; Black-billed Cuckoo; Groove-billed Ani; Snowy (post-1900) and Barred Owls; White-collared Swift; Broad-billed, Violet-crowned, Blue-throated, and Ruby-throated Hummingbirds; Red-headed Woodpecker; Greater Pewee; Eastern Wood-Pewee; Yellow-bellied, Dusky-capped, Great Crested, and Sulphur-bellied Flycatchers; Thick-billed Kingbird; Scissor-tailed Flycatcher; Eurasian Skylark; Blue Jay; Sedge Wren; Dusky Warbler; Northern Wheatear; Veery; Gray-cheeked and Wood Thrushes; Rufous-backed Robin; Gray Catbird; Curve-billed Thrasher; Yellow, White, White/Black-backed, and Black-backed Wagtails; Red-throated and Sprague's Pipits; Brown Shrike; White-eyed, Yellow-throated, Philadelphia, and Yellow-green Vireos; Blue-winged, Golden-winged, Blue-winged × Golden-winged, Golden-cheeked, Yellow-throated, Grace's, Pine, Cerulean, Prothonotary, and Worm-eating Warblers; Louisiana Waterthrush; Kentucky, Connecticut, Mourning, and Red-faced Warblers; Scarlet Tanager; Pyrrhuloxia; Varied and Painted Buntings; Cassin's, Field, Baird's, and LeConte's Sparrows; Rustic and Snow Buntings; Common Grackle; Streak-backed Oriole; Brambling; White-winged Crossbill; and Common Redpoll.

The CBRC also reviews records of any species not yet on the State List.

Committee membership. Don Roberson is currently the Secretary and all reports should be sent directly to him (282 Grove Acre, Pacific Grove, CA 93950). The other current members (as of Feb 1988) are Stephen F. Bailey, Louis R. Bevier, Jon L. Dunn, Kimball L. Garrett, Paul E. Lehman, Curtis Marantz, Guy McCaskie, Joseph Morlan, and Peter Pyle. Former members also voted on some of the records included in this report.

Format. The format is very similar to that of the eighth (Morlan 1985) and, especially, the ninth (Roberson 1986) reports. Following Roberson (1986), the number of CBRC-accepted records is given in parentheses following the species name; those marked with an asterisk (*) are no longer on the Review List. Each record includes the locality and a standard abbreviation for the county (see below). The initials of the reporting observer(s), followed by the CBRC record number, are enclosed in parentheses. If the observer(s) who initially found or identified the bird provided documentation, his or her initials are listed first, followed by a semicolon. If an observer submitted a photograph, a dagger (†) follows his or her initials. Many photographers also submitted written descriptions with their photos, a practice we strongly encourage. A specimen is indicated by "#," followed by the acronym (see below) for the museum that houses it and the specimen number (if available). Unless otherwise indicated by "#" or "†," all reports are sight records. The full date span for each record is included. In most cases, the dates are from

the seasonal reports in *American Birds* and *Audubon Field Notes*. Dates differing from those listed in those publications are italicized, indicating that the Committee believes they are correct.

Some records document individual birds returning for additional years. Each annual occurrence is reviewed under a separate number and Committee members indicate if they believe the bird is the same individual as one previously accepted. If a majority expresses an opinion that it is the same, it is treated as additional dates of a previous record and does not add in the statistical count. Otherwise, it is considered a new individual. Following Committee policy, individuals judged "probably" the same are judged the same individual, but those considered "possibly" the same are handled as new birds.

All annotations are mine, although the information usually is derived from the Committee's files. The CBRC does not formally review the sex or age of a rarity submitted. Such designations given in this report are my opinions (but with Committee input), based on what I consider clear evidence. Likewise, the Committee does not assign rarities to a particular race. For some of the specimen records in this report, however, I include subspecific information where the identification to race was made by a competent ornithologist who has examined the specimen independently. In a few cases where the evidence is compelling, I have assigned individuals seen in the field to a particular race or subspecies group, using the cautionary wording "a bird showing the characters of. . . ." This caveat follows the practice of the British Birds Rarities Committee in its handling of subspecies (e.g., Rogers 1987).

Abbreviations. The Committee has adopted the following abbreviations for counties: ALA, Alameda; ALP, Alpine; AMA, Amador; BUT, Butte; CLV, Calaveras; COL, Colusa; CC, Contra Costa; DN, Del Norte; ED, El Dorado; FRE, Fresno; GLE, Glenn; HUM, Humboldt; IMP, Imperial; INY, Inyo; KER, Kern; KIN, Kings; LAK, Lake; LAS, Lassen; LA, Los Angeles; MAD, Madera; MRN, Marin; MRP, Mariposa; MEN, Mendocino; MER, Merced; MOD, Modoc; MNO, Mono; MNT, Monterey; NAP, Napa; NEV, Nevada; ORA, Orange; PLA, Placer; PLU, Plumas; RIV, Riverside; SAC, Sacramento; SBT, San Benito; SBE, San Bernardino; SD, San Diego; SBA, Santa Barbara; SF, San Francisco; SJ, San Joaquin; SLO, San Luis Obispo; SM, San Mateo; SCL, Santa Clara; SCZ, Santa Cruz; SHA, Shasta, SIE, Sierra; SIS, Siskiyou; SOL, Solano; SON, Sonoma; STA, Stanislaus; SUT, Sutter; TEH, Tehama; TRI, Trinity; TUL, Tulare; TUO, Tuolumne; VEN, Ventura; YOL, Yolo; YUB, Yuba.

Museums that house specimens reported herein or that are otherwise referred to are abbreviated as follows: AMNH, American Museum of Natural History, New York; CAS, California Academy of Sciences, San Francisco; LACM, Los Angeles County Museum of Natural History; MLML, Moss Landing Marine Laboratory; MVZ, Museum of Vertebrate Zoology, University of California, Berkeley; PGMNH, Pacific Grove Museum of Natural History; SBCM, San Bernardino County Museum; SBMNH, Santa Barbara Museum of Natural History; SDNHM, San Diego Natural History Museum; USNM, United States National Museum of Natural History, Washington, D.C.

Other standard abbreviations include NM, National Monument; NP, National Park; NS, National Seashore; NWR, National Wildlife Refuge; Pt., Point; R., River. Compass directions are sometimes abbreviated.

Contributors: Contributors are listed below and are identified (accepted records only) by their initials in the text: Kay and Waldo Abbott, Jonathan Alderfer, Stephen W. Allison, Robby J. Bacon, Stephen F. Bailey, Alan Baldridge, Larry R. Ballard (LRBa), Alan D. Barron, Dean Bazzi, Louis R. Bevier (LRBe), Laurence C. Binford, E. Clark Bloom, N. Bruce Broadbooks, June Buntin (JBun), John Butler (JBut), Eugene A. Cardiff, Steven W. Cardiff, Theodore A. Chandik, Mark O. Chichester, Herbert Clarke, Paul Collins, Alan M. Craig, Brian E. Daniels (BEDa), Bruce E. Deuel (BEDe), Donna L. Dittmann, Jon L. Dunn, Ray Ekstrom (RE), Alan M. Eisner, Bruce G. Elliott, Richard A. Erickson, Jules Evens, Shawneen E. Finnegan, Carolyn Frederiksen, Gary Friedrichsen, Albert Ghiorso, William Gladfelter (WGl), Wayne Gochenour (WGo), Jesse Grantham (JGra), Ed Greaves, Helen Green, Michael Green, William E. Grenfell, Jr., Jeffrey A. Greenhouse (JGre), Marguerite Gross (MGro), Daniel L. Guthrie, Kem L. Hainebach, Keith Hansen, W. Ed Harper, Stanley W. Harris, Loren R. Hays, Matt Heindel, R. Phil Henderson, Don Hoechlin (DHoe), David A. Holway (DAH), Alan S. Hopkins, Steve N. G. Howell, Joseph R. Jehl, Jr., Virginia P. Johnson. H. Lee Jones, Brian W. Keelan, Laura Klaisle, Bruce LaBar (BLaB), Jeri M. Langham, Charles S. Lawson, Paul E. Lehman, Gary S. Lester, Ron LeValley, Michael J. Lippsmeyer, Timothy Manolis, Curtis Marantz, John Mariani (JMa), Roger Marlowe, Robert E. Maurer, Jr., Guy McCaskie, John E. McDonald, Nancy McMahon, Maggie Mellor, Peter J. Metropulos, Elton Morel, Joseph Morlan (JM), Dan Nelson, Henry L. Oritz, Benjamin D. Parmeter, Hill Penfold, Eleanor A. Pugh, Peter Pyle, David E. Quady, William R. Radke, William Reese, Don Roberson, Jim Rooney, James S. Royer, Barry Sauppe (BSa), Brad Schram (BSch), Thomas S. Schulenberg, Douglas Shaw, Arnold Small, R. Martin Smith, Bob Sowers (BSo), Richard Stallcup, John C. Sterling, Gary J. Strachan, James Strauss (JS), Patrick A. Sweeney, Steve Summers, Chris Tenney, John Thompson (JTh), Bob Tintle, Dorothy Tobkin, John Trochet (JTr), Arthur Wang, Richard E. Webster, Brian J. Weed (BWe), Jack Wilburn (JW), Mike Wihler, Laidlaw Williams, Douglas R. Willick, Mr. and Mrs. H. C. Wills, John C. Wilson, Brian Woodbridge (BWo), Thomas E. Wurster, Vernal L. Yadon, David G. Yee, Anne K. Yost, and Gary Zahn.

Acknowledgments. The Committee is most grateful to the many contributors listed above, without whom this report would not have been possible. The Committee is particularly grateful to the many photographers who submitted transparencies at their own expense for our review and permanent archival in the files. The increased use of photography to document rarities with photos has made the CBRC's job much easier and is encouraged. Photographers who deserve special mention for the extent of their contributions are Albert Ghiorso, Don Roberson, and, especially, Richard E. Webster.

The Committee also appreciates the review of certain difficult records by outside experts Peter J. Grant, Lars Jonsson, Ben F. King, Philip D. Round, and Richard L. Zusi. The continued help of Point Reyes Bird Observatory in obtaining and compiling records from the Farallones is greatly appreciated.

The Committee thanks David L. Suddjian for pointing out errors in earlier reports, which are corrected herein. Members and former members who reviewed an earlier draft of this manuscript and made many useful contributions and corrections were Stephen F. Bailey, Louis R. Bevier, Laurence C. Binford, Richard A. Erickson, Kimball L. Garrett, Jeri M. Langham, Paul E. Lehman, Curtis Marantz, Guy McCaskie, Joseph Morlan, Peter Pyle, and Don Roberson. The following curators or collections managers graciously provided members access to their collections and/or sometimes photographed or assisted in the photographing of a particular specimen: Luis F. Baptista and Stephen F. Bailey (CAS), Sheila Baldridge (MLML), Ned K. Johnson and Anne Jacobberger (MVZ), Vernal L. Yadon (PGMNH), Ralph W. Schreiber and Kimball L. Garrett (LACM), Amadeo M. Rea and Susan Breisch (SDNHM), Eugene A. Cardiff (SBCM), Dennis M. Power and Paul Collins (SBMNH), and Richard L. Zusi and Eirik A. T. Blom (USNM). Lloyd F. Kiff continues to archive the CBRC records, all of which are ultimately deposited at the Western Foundation of Vertebrate Zoology, 1100 Glendon Avenue, Los Angeles, CA 90024, for which we are most grateful.

ACCEPTED RECORDS

YELLOW-BILLED LOON *Gavia adamsii* (26). One was about ½ mile off Pt. Joe, Pebble Beach, MNT, 29 Dec 1969 (AB; 40-1985). One was off the Hopkins Marine Station, Pacific Grove, MNT, 21 Jan-15 Mar 1972 (AB; RAE; 41-1985). One immature was about ¼ mile off Lovers Pt., Pacific Grove, MNT, 13 Jan 1985 (AB; HLO†; 62-1985).

The bird off Pt. Joe was originally published as an adult in *AB* 24:444, but the description indicates an immature.

*LAYSAN ALBATROSS *Diomedea immutabilis* (15*). One was seen from shore off Pigeon Pt., SM, 30 March 1979 (BSa; 99-1983).

Small numbers are now found regularly off the coast, primarily between late fall and early spring and especially off central California. This species is no longer on the Review List.

MOTTLED PETREL *Pterodroma inexpectata* (5). One was found dead on the beach at Abbotts Lagoon, Pt. Reyes NS, MRN, 25 Feb 1976 (#CAS 69267; 162-1984). One was found freshly dead at Cayucos, SLO, 28 Feb 1976 (#SDNHM 37952; 18-1985). One was seen from shore at Pt. Pinos, Pacific Grove, MNT, 12 Dec 1984 (DR; 8-1985).

The account of the Abbotts Lagoon and Cayucos birds (plus one additional beached bird still under review) was published by Ainley and Manolis (1979). The one from Pt. Pinos, seen flying during a gale, is the second record of a healthy bird seen from land.

COOK'S PETREL *Pterdroma cookii* (16). One was seen from the end of the Whitewater R. dike, north end of the Salton Sea, RIV, 24-29 July 1984 (SWC, DLD; GMcC, REW†; Figure 1; 196-1984). Five were seen off the Cordell Bank, MRN, 23 June 1985 (JML, MJL, JM, DR†, REW; 188, 190-193-1985).

These records are all accepted with the disclaimer that *P. defilippiana* and *P. pycrofti* are eliminated on distribution, not on appearance (see Roberson 1986 for a fuller explanation of this disclaimer). Two members felt the photograph from beyond the Cordell Bank (193-1985; bird 6) showed enough detail for the bird to be identified as *P. cookii* without the disclaimer, although other members felt the detail shown was not even sufficient to indicate the bird was a *Pterodroma*! Six birds were seen that day off the Cordell

Bank. One bird (189-1985; bird #2), seen more distantly than the others, is currently under review under the subgenus *Cookilaria*.

The remarkable Salton Sea record involved a healthy bird seen flying daily back and forth beyond the end of the dike protruding into the Salton Sea. This is the first interior record and adds yet another pelagic species to the list for this inland body of water. For a more detailed account of this record see *AB* 38:1061.

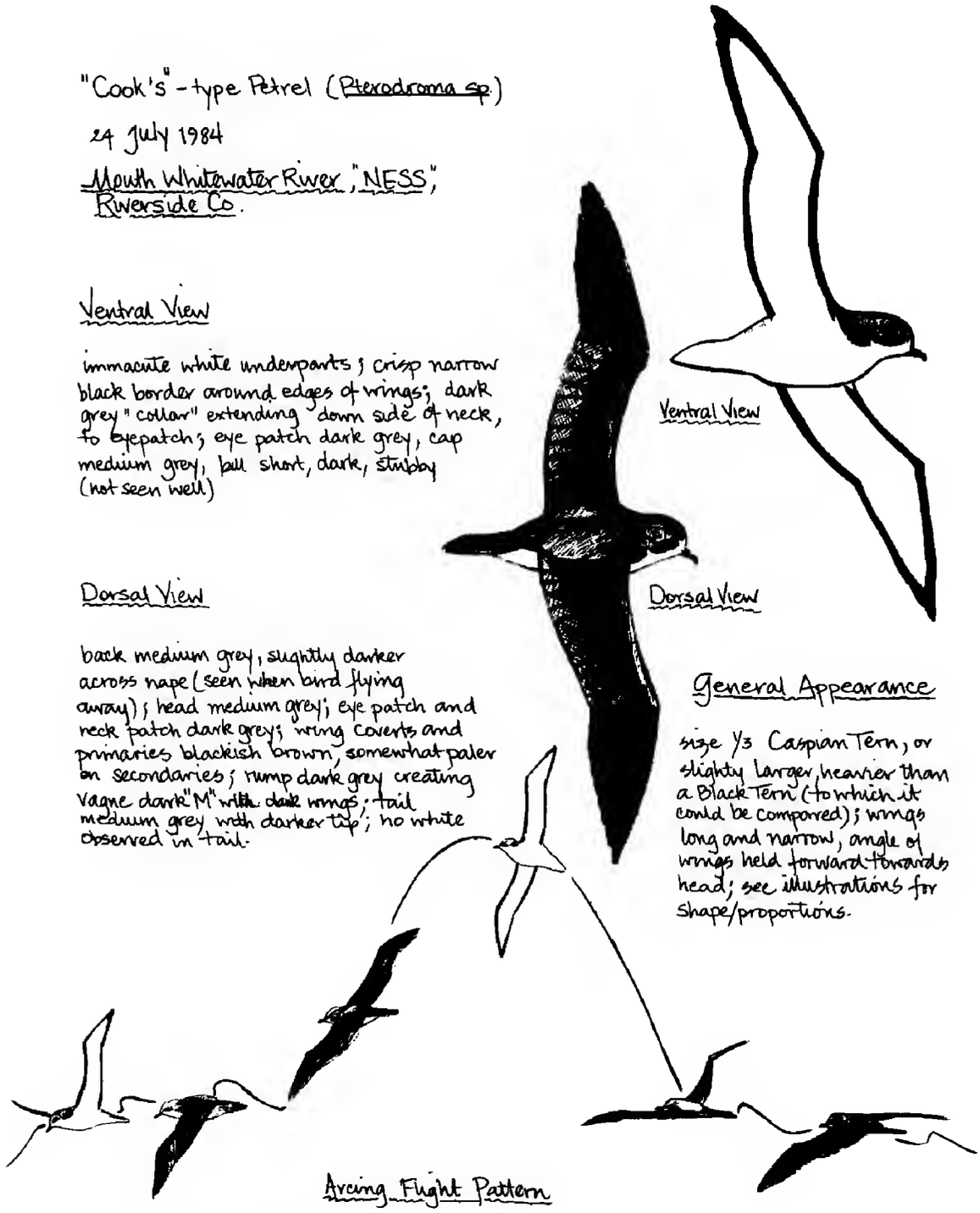

"Cook's"-type Petrel (Pterodroma sp.)
24 July 1984
Mouth Whitewater River, "NESS", Riverside Co.
Ventral View
immaculate white underparts; crisp narrow black border around edges of wings; dark grey "collar" extending down side of neck, to eyepatch; eye patch dark grey, cap medium grey, bill short, dark, stubby (not seen well)
Dorsal View
back medium grey, slightly darker across nape (seen when bird flying away); head medium grey; eye patch and neck patch dark grey; wing coverts and primaries blackish brown, somewhat paler on secondaries; rump dark grey creating vague dark "M" with dark wings; tail medium grey with darker tip; no white observed in tail.
Ventral View
Dorsal View
General Appearance
size 3/4 Caspian Tern, or slightly larger, heavier than a Black Tern (to which it could be compared); wings long and narrow, angle of wings held forward towards head; see illustrations for shape/proportions.
Arcing Flight Pattern
flight was low and direct for a few flaps and glides and then would fly high up in the arc and glide back down, then would repeat the pattern.

Figure 1. Cook's Petrel, north end of Salton Sea, Riverside Co., California, 24 July 1984.

Sketches by Donna L. Dittmann

WILSON'S STORM-PETREL *Oceanites oceanicus* (22). One was on Monterey Bay, MNT, 7 Sep-16 Oct 1968 (AB, TAC; 236-1984). One was seen on Monterey Bay, MNT, 12 Oct 1969 (AB, LCB, BDP; 235-1984). Up to two (two on 16 Sep only) were on Monterey Bay, MNT, 26 Aug-7 Oct 1984 (JLD, JML, MJL, JM, GMcC, DR; 198-1984, 258-1984).

The "two to five" at Monterey Bay 24 Sep-16 Oct 1977 (previously accepted 99-1977; Luther 1980) should be revised to "up to four birds."

A few individuals of this species are now found nearly every fall in the large storm-petrel flocks on Monterey Bay off Moss Landing, MNT.

RED-TAILED TROPICBIRD *Phaethon rubricauda* (3). One adult was seen at 34° 09′ N, 122° 35′ W, about 100 nautical miles WSW of Pt. Arguello, SBA, 30 Sep 1979 (GF; 87-1985). Another adult seen at 34° 58′ N, 122° 36′ W was about 80 nautical miles SW of Pt. Piedras Blancas, SLO, on 8 Oct 1979 (GF; 89-1985). These were two of three incorrectly reported as being 100-200 miles off the coast between 30 Sep and 8 Oct 1979 (*AB* 34:200; Garrett and Dunn 1981).

BROWN BOOBY *Sula leucogaster* (17). One immature was collected at Imperial Dam, IMP, on 20 Sep 1946 (#USNM 393391; 194-1984). Up to eight birds (eight records), including three adults, were at the Salton Sea, IMP/RIV, 6 Sep-11 Nov 1969, with one adult remaining to 25 Apr 1970 (HC†, GMcC; 90-1984). One immature was on Southeast Farallon Island, SF, 24-28 Sep 1983 (KH; 126-1985).

The 1969 invasion of Brown Boobies to the Salton Sea was unprecedented and has never been equaled. Blue-footed Boobies (*Sula nebouxii*) were also present there that fall. Larger numbers of that latter species invaded in 1971 and 1972 but only a few Brown Boobies appeared during those years. See McCaskie (1970a) for a full account of the 1969 invasion. The sighting from the Farallones constitutes the second coastal record and the first for northern California. There were two sightings from coastal California waters in 1983 (one previously accepted; Roberson 1986); they were during a major "El Niño" that brought a number of subtropical species (e.g., Brown Pelican, *Pelecanus occidentalis*, and Elegant Tern, *Sterna elegans*) farther north and in greater numbers than usual. The Imperial Dam bird was clubbed over the head with an oar (!) and succumbed during the evening, demonstrating the tameness of boobies (McMurray 1948).

OLIVACEOUS CORMORANT *Phalacrocorax olivaceus* (3). One adult was at the north end of the Salton Sea, RIV, 27 July-*31 Aug* 1985 (BEDa, GMcC, REW†; 100-1985). This is considered to be the same individual first found 1 Aug 1982 at the north end of the Salton Sea and seen intermittently at both ends of the Salton Sea thereafter (previously accepted 76-1982, 37-1983, Morlan 1985; 66-1983, Roberson 1986).

REDDISH EGRET *Egretta rufescens* (17). One immature was at the Tijuana R. mouth, SD, 12-23 Oct 1963, and was collected on the last date (GMcC; #SDNHM 30757; 48-1986). Present with that bird was another immature 12 Oct-6 Nov (GMcC; 339-1986). A basic-plumaged adult was at Elkhorn Slough, Moss Landing, MNT, late Aug-8 Oct 1967 (AB, GMcC; 37-1985). An immature was along the Santa Ana R. at Glassell, Anaheim, ORA, 10 Sept 1984 (LRH; 210-1984). One immature at the Sweetwater R. mouth, San Diego Bay, SD, 28 Oct 1984 was subsequently found dead in late Feb 1985 (GMcC; REW†; #SDNHM; 274-1985). A basic-plumaged adult, present at the south end of San Diego Bay, Chula Vista, SD, 12 Dec 1984-*9 Mar* 1985 (REW†, AME; 50-1985), was judged to be the same individual returning for its third winter (previously accepted 45-1984, 49-1984; Roberson 1986).

An account of the 1963 Imperial Beach birds was published by McCaskie (1964). The adult at Moss Landing represents the first and only record from northern Califor-

nia and the most northerly record for western North America. The species is now of nearly annual occurrence in coastal SD but is strictly casual elsewhere.

YELLOW-CROWNED NIGHT-HERON *Nycticorax violaceus* (12). An adult was seen at the Tijuana R. mouth, Imperial Beach, SD, 3 Nov 1962 (GMcC; 42-1986). An adult at the same location 22-25 Oct 1963 (collected on the last date) was narrowly judged probably to be different from the first (GMcC; #SDNHM 30758; 39-1986). An adult at San Elijo Lagoon, SD, 13 July-8 Oct 1984 (GMcC, REW†; 237-1984) was judged to be the same individual that has intermittently been present there and at the nearby Scripps Institute, La Jolla, since 25 Oct 1981 (previously accepted 88-1981, Binford 1985; 81-1982, 37-1983, Morlan 1985).

The 1962 record was the first for California. The 1963 bird, the only specimen from California, was published by McCaskie (1964). McCaskie and Banks (1966) assigned this bird to the race *N. v. bancrofti*, breeding from central Baja California to western Mexico and the West Indies, rather than the nominate race, *N. v. violaceus*, from the eastern United States. Unitt (1984) remeasured the bird's bill (key measurement being the depth at the nostril, which is 22.5 mm) and supported the subspecific identification. For a summary of California records through 1977, see Hoechlin (1978).

WHITE IBIS *Eudocimus albus* (3). One immature at the Sefton estate on Pt. Loma, SD, 15 Nov 1935 was collected 20 Nov 1935 (#SDNHM 170999; 36-1986).

This record was first published by Huey (1936) and at that time was considered the second state record, though the earlier one for Palo Verde, IMP, in March 1914 (Lincoln 1923) is not particularly detailed and has been questioned (Garrett and Dunn 1981). Pending acceptance of the earlier report, the San Diego bird stands as the first state record. Huey (1936) listed the full date span, but Grinnell and Miller (1944) gave only the 20 Nov date, which was repeated by Roberson (1980) and Garrett and Dunn (1981) but corrected by Unitt (1984). This record passed 9-1, but more recent coastal records have not fared as well, being rejected because their representing natural occurrences was questioned (Binford 1983, Morlan 1985). The Committee felt that the presumed greater rarity of this species in captivity in the 1930s than in the 1970s and the immature plumage suggested the 1935 bird was likely wild. The one dissenter felt it was inconsistent to differentiate this record from other rejected coastal records and pointed out a lack of any pattern of fall records for the state.

TRUMPETER SWAN *Cygnus buccinator* (6). One seen at Bailey Creek Meadow, between Grasshopper Valley and Termo, LAS, 8 Nov 1935 (189-1984) was previously published by McLean (1937). Another at Abbotts Lagoon, Pt. Reyes NS, MRN, 1 Jan-9 Mar 1962 (GMcC; 193-1984) was previously published, but with incomplete dates, by Williams and Miller (1963).

These were two of five older records (see under Unaccepted Records, identification questionable, for the remaining three) that the Committee reviewed. As many recent reports have been, they were difficult for the Committee to evaluate. For any Trumpeter Swan, observers are urged to describe in detail the facial pattern where the white feathering meets the black skin around the eye. On the Tundra Swan (*Cygnus columbianus*) the black closes in front of the eye (eye then conspicuous against white background) and then cuts straight across the forehead, while on the Trumpeter Swan the black extends into the eye, making the eye inconspicuous, and the white dips down on the forehead in a distinct V shape. I believe this is the single best feature differentiating adult Trumpeter from Tundra Swans. The Committee is presently at a loss in identifying the immatures. Vocalizations can also be an excellent character if the observer is familiar with the full range of variation in Tundra Swan calls. The primary call of the Trumpeter has been described with different interpretations, but it is clearly quite different from any call of the Tundra. It has been likened to the noise made from a French horn (Bent 1925). However, immature Trumpeters have thinner and higher-pitched vocalizations than do adults (Banko 1960).

EMPEROR GOOSE *Chen canagica* (35). Four were at Pacific Grove, MNT, and at the nearby Carmel R. mouth, MNT, 10 Dec 1948-8 Feb 1949 (LW; 63-1985). Two at the Carmel R. mouth, MNT, mid Dec 1949-early Feb 1950 (LW; 65-1985) were considered possibly part of that flock but are treated here as separate birds. Two were at Morro Rock, Morro Bay, SLO, 12 Dec 1966 with one remaining until 12 Feb 1967 (EAP; GMcC; 60-1986). Five at Anaheim Bay, Seal Beach, ORA, 15 Dec 1968 (JRJ†, GMcC; 56-1986) were reduced to three by late Dec and just one by early Jan 1969, which remained until 8 Mar 1969. At least three of the birds were photographed. The "departing" birds were casualties of the hunting season. One was at Lower Klamath NWR, SIS, *28-29 Oct* 1979 (BEDe; 257-1984).

The ages of some of the above birds were specified in the original reports of them, but ageing of this species is very difficult because juveniles molt nearly all of the dusky mottling on the head by early winter or earlier and then closely resemble the adults.

AMERICAN BLACK DUCK *Anas rubripes* (1). One was shot by a hunter at Willows, GLE, 1 Feb 1911 (#MVZ 17198; 88-1978).

This constitutes a new addition to the State List. The path for acceptance of this record was a long and arduous one. It was originally submitted in 1978 and after two circulations was rejected for the State List and published as "unaccepted, origin questionable" (Luther et al. 1979). Because only the species, not the record, had been voted on, the Committee decided to recirculate the record under its revised procedures. After one round, the vote stood at 3-7, but extensive comments by one member prompted another round, and the record finally passed 9-1 on the third round (six rounds in all!).

The Committee's change of opinion came about largely as a result of the research efforts by the one member, who pointed out that in 1911 "planted" introduced ducks were quite rare but by the 1930s the plantings were much more common as a result of the crash in waterfowl populations in the late teens and twenties. This may have caused Grinnell and Miller (1944) to question the record's representing a natural occurrence and was perhaps the main factor in the record's not having fared well in earlier Committee evaluations. Supporters of the record pointed out that Grinnell had originally endorsed it (Grinnell 1911 and Grinnell et al. 1918) and did not publish doubts about it before his death in 1939. They speculated that Miller had decided to question the record at some point before the publication of Grinnell's and his epic work in 1944. Supporters also pointed to a pattern of vagrancy of this species in western North America, even to Alaska. Long-distance vagrancy is further supported by scattered records from the British Isles, by single records from Sweden and the Azores (Cramp and Simmons 1977), and by a bird shot in Korea in June 1977 that had been banded in Virginia over eight years earlier (Banks 1985)!

The lone dissenter in the end still felt that it was unwise to question the decision of Grinnell and Miller (1944), since more information concerning game stocking in the early 1900s must have been available to them than to the present Committee. He also felt that it was quite inappropriate to speculate on the motivations of these two authors, who have long been deceased and cannot comment on the issue.

Despite our acceptance of this particular record, the issue of recent American Black Ducks is by no means resolved. The 11 Nov 1978 record for the Niland Fish Hatchery, IMP, (149-1980; Binford 1985) still stands as unaccepted (natural occurrence questionable), and three other reports from northern California are unreviewed. There is now a small introduced population around Puget Sound, Washington, and Vancouver, British Columbia, and local duck clubs sometimes stock this species or Black Duck × Mallard (*Anas platyrhynchos*) hybrids. A shipment of some 1000 such hybrids from Minnesota arrived at the Prado Duck Club, RIV, during the summer of 1986 (Loren R. Hays in litt.)! Obviously, a detailed assessment of the status and plumage variability of stocked American Black Ducks and hybrids at local duck clubs would greatly help the review of past and future records.

GARGANEY *Anas querquedula* (4). One male was at Modoc NWR, MOD, *10 Mar*-28 Apr 1985 (ECB, JML, MJL, WRR†, JTr†; 47-1985).

All of the records are of males in the spring, which is not surprising since spring males wear by far the most easily identified of the species' plumages. The Garganey is one of the most migratory of all waterfowl, and fall migrants would likely winter well south of California.

TUFTED DUCK *Aythya fuligula* (24). One male on a pond at the property of the Kaiser Gravel Plant in the Livermore Valley, ALA, was collected sometime between 23 Dec 1948 and 8 Jan 1949 (#CAS 61012; 155-1984). One male was at Arcata, HUM, 10 Apr 1968-10 Apr 1969 (SWH; 234-1984). Another male was at Abbotts Lagoon, Pt. Reyes NS, MRN, *5 Feb-3 Mar* 1980 (JE; 101-1983); this record is considered the first winter of Limantour's "second male," which was present 9 Nov-12 Dec 1980 (previously accepted 237-1980, 44-1981; Binford 1985). One male was at Saticoy, VEN, 16 Feb-17 Mar 1985 (TEW; 42-1985). A female was at the same locality 17 Feb-3 Mar 1985 (PEL; LRBe, TEW; 197-1985). One male at a pond near Grenada, SIS, 7 Apr 1985, was felt to be the same bird as one 4 miles away at Salt Lake, Lava Lakes Nature Center, near Yreka, SIS, 2-11 May 1985 (RE; SFB; 93-1985 and 294-1986); it was, by error, circulated and accepted twice under two different numbers.

The specimen from the Livermore Valley constitutes the first record for mainland North America and was published with the equivocal date span by Orr (1950). Orr (1962) later suggested the specimen had been secured on "about 28 December 1948." The Arcata record was the second for the state and remains the only one for summer. Although separate date periods were published by Harris and Gerstenberg (1970) and Yocum and Harris (1975), the Committee suspected the bird was continuously present in the area, making periodic visits to the sewage ponds where it was seen. It may have lingered into 1970 (record 454-1986, currently under review).

Small numbers of this species are now detected regularly in winter, the great majority from the coastal slope. Individuals often return for successive winters, and since the localities visited can vary slightly from year to year and even during the same winter, it is often difficult to assess the exact number of individuals.

KING EIDER *Somateria spectabilis* (15). One immature female was collected at Tomales Bay, MRN, 16 Dec 1933 (#CAS 1659; 158-1984). One (description appears to be of a female) was at Monterey harbor, MNT, 3 Feb-16 Mar 1958 (LW; 66-1985). One immature male at Cypress Pt., Pebble Beach, MNT, 21-26 Mar 1959 was probably the same bird that was rediscovered at the nearby Monterey harbor, MNT, 24-25 June 1959 (GMcC; LW; 199-1984). One at Brooks Island, Richmond, CC, 29 June through *Aug* 1984 (SFB†, RAE, DR: 156-1984) was judged to probably be the same bird there again 4 to at least 21 Sep 1985 (JML, JM; 120-1985). It may have remained continually through the intervening period in the general region.

A photo of the female from Año Nuevo State Beach, SM, 30 Apr 1978 (RMS†) supplements and expands the date span from the previously accepted 6-7 May (92-1978; Binford 1983). The Committee would appreciate any information on the earlier dates. The bird was "rumored present" since February (*AB* 32:1050).

The 1933 specimen was said to have been shot from a group of three (Moffitt 1940). An account of the MNT records cited above was published by Williams and Holmes (1960).

This species is of casual occurrence in coastal California, with the preponderance of records from northern California in winter, but birds do occasionally oversummer.

MISSISSIPPI KITE *Ictinia mississippiensis* (14). One in first summer plumage was at Furnace Creek Ranch, Death Valley NM, INY, 28-29 May 1982 (DHoe†, JSR†;

50-1986). Another in first summer plumage was along the Colorado River at Blythe, RIV, 24 July 1985 (TM; 101-1985).

This species is a casual visitant to California, especially in late spring. Furnace Creek Ranch is a particularly good locality; the record cited above is the fifth accepted for that location.

*HARRIS' HAWK *Parabuteo unicinctus* (2*). One adult female was collected about 2¼ miles south of Palo Verde, IMP, 1 Nov 1914 (#MVZ 24926; 209-1984). Two immature females were collected ½ mile south of Palo Verde, IMP, 23 Dec 1915 (#MVZ 26433 and 26434; 208-1984).

This species was formerly resident along the Colorado River, with smaller numbers inhabiting the Imperial Valley, IMP. It was extirpated at the latter locality by the early 1950s, and the last sightings along the Colorado River were in the mid-1960s (Garrett and Dunn 1981). Efforts to reestablish the species along the Colorado River, particularly in IMP, have had some limited success, although it is too early to assess whether the effort will succeed. Over the last decade, the population in southern Arizona has increased and spread substantially (Gary Rosenberg pers. comm.), inspiring hope for a California recovery or perhaps a recolonization from Arizona. It also implies that factors other than habitat loss may have been responsible for the Harris' Hawk's demise.

The Committee no longer reviews records of this species.

ZONE-TAILED HAWK *Buteo albonotatus* (17). An adult seen near Bonsall, SD, 19 Oct 1984-1 Jan 1985 (GMcC; 279-1984) was judged to be the same wintering bird returning for its third winter (previously accepted 135-1983, 5-1983; Roberson 1986).

YELLOW RAIL *Coturnicops noveboracensis* (53). Seventeen specimens collected in the late fall and early winter and one collected in early spring between 1882 and 1910 are detailed below. Those marked with two asterisks were not listed by Grinnell and Miller (1944).

10 Apr 1892	SM, 168-1984**	#CAS 70771
21 Nov 1897	Alameda, ALA, 170-1984	#CAS 43783
14 Dec 1898	Alviso, SCL, 169-1984	#CAS 11750
20 Dec 1898	SON, 167-1984	#CAS 21616
7 Nov 1900	Alameda, ALA, 170-1984	#CAS 58796
20 Nov 1900	Pt. Reyes Station, MRN, 174-1984	#CAS 43782
1901 or 1902	Mountain View, SCL 180-1984	#CAS 15548
27 Oct 1905	Pt. Reyes MRN, 172-1984	#CAS 34742
28 Oct 1905	salt marsh east of Alameda, ALA, 178-1984**	#CAS 58799
30 Oct 1905	salt marsh east of Alameda, ALA, 177-1984**	#CAS 58798
24 Nov 1905	Pt. Reyes, MRN, 173-1984	#CAS 38891
27 Dec 1905	Pt. Reyes, MRN, 171-1984	#CAS 38743
27 Dec 1905	Pt. Reyes, MRN, 175-1984	#CAS 38742
2 Nov 1908	MER, 181-1984	#CAS 12823
14 Nov 1908	MER, 182-1984	#CAS 13500
30 Dec 1908	MER, 183-1984	#CAS 13501
17 Nov 1910	ALA, 176-1984**	#CAS 58797

In addition, although not formally reviewed, the Committee decided to accept the following seventeen additional specimen or nest records, the actual evidence for which has been lost (many in the 1906 San Francisco earthquake). All are listed by Grinnell and Miller (1944).

Figure 2. Little Stint, Elkhorn Slough, Moss Landing, Monterey Co., California, 15 Sep 1985.

Photo by William E. Grenfell, Jr.

Figure 3. Little Stint, Elkhorn Slough, Moss Landing, Monterey Co., California, 15 Sep 1985.

Photo by Alan Hopkins

Nest records:

1 June 1939	Bridgeport Valley, MNO
2 June 1939	Bridgeport Valley, MNO
6 June 1922 (nest with eight eggs)	Long Valley, MNO

Specimen records:

undated	Berryessa, SCL
28 Dec 1883	Alvadaro, ALA
16 Apr 1889	Quincy, PLU
24 Apr 1889	Quincy, PLU
2 Jan 1893	Redwood City, SM
23 Dec 1894	Redwood City, SM
12 Dec 1896	Newport Bay, ORA
21 Dec 1896	Redwood City, SM
22 Jan 1897	Redwood City, SM
24 Oct 1897	Redwood City, SM
17 Nov 1911	Redwood City, SM
4 Jan 1912	Redwood City, SM
8 Dec 1915	Suisun Marsh, SOL
9 Oct 1917	Shandon, SLO

One at Crespi Pond, Pacific Grove, MNT, *2-8 Oct* 1970 (WR; RS; 230-1984) provided the first record for the state since 1936. The species is now much rarer than it was earlier in this century, although the early collectors with dogs very likely had an advantage over present-day birders attempting to locate this very secretive species.

PURPLE GALLINULE *Porphyrula martinica* (1). One juvenile female was picked up injured after hitting an overhead wire in a yard on the west side of Pt. Loma, SD, 1 Oct 1961 (#SDNHM 30289; 30-1986). The bird died the night of 2 Oct 1961. A brief account of this first state record was published by Huey (1962).

WILSON'S PLOVER *Charadrius wilsonia* (3). One male at Pacific Beach, SD, 24-29 June 1894 (#MVZ 31920; 58-1985) was collected on the latter date (Ingersoll 1895).

SPOTTED REDSHANK *Tringa erythropus* (2). A breeding-plumaged bird at Crescent City, DN, on 14 May 1985 was relocated a short distance north at the Elk Creek mouth on Lake Earl on 15 May (RAE; ADB, RLeV†; 94-1985). The previous record of this Eurasian species at the north end of the Salton Sea, RIV, 30 Apr-4 May 1983, also involved a breeding-plumaged bird in spring (Roberson 1986).

UPLAND SANDPIPER *Bartramia longicauda* (8). One adult at Southeast Farallon Island, SF, 22-24 Aug 1968 (#MVZ; 64-1985) was presumably caught and eaten by a cat, as a wing was found 31 Aug 1968 (DeSante and Ainley 1980). Steven W. Cardiff, while dove hunting SW of Colton, SBE, collected one juvenile on 10 Sep 1973 (#SBCM 5229; 55-1986). One was at Furnace Creek Ranch, Death Valley NM, INY, 17-18 May 1985 (JML; MJL, GMcC, REW†; 75-1985).

Records of the Upland Sandpiper are about equally divided between late spring and early fall. Because of the brevity of its visits, this species is extremely difficult for birders to chase down. Furnace Creek Ranch, with three May records (and another report unreviewed), has been the best place to find this species to date.

HUDSONIAN GODWIT *Limosa haemastica* (4). One was along Sandy Mush Rd., near the east end of Merced NWR, MER, 30-31 Aug 1983 (RJB; GZ†; 123-1985). The four records are equally divided between spring and fall.

BAR-TAILED GODWIT *Limosa lapponica* (5). A female at Pebble Beach, near Crescent City, DN, 3-5 June 1984 (RAE; JR†; 186-1984) established the first spring record of this species.

LITTLE STINT *Calidris minuta* (2). One juvenile was at Moonglow Dairy, Elkhorn Slough, Moss Landing, MNT, 10-21 Sep 1985 (JMa†; SFB, JLD, RAE, WEG†, ASH†, JML, MJL, CM, JM, GMcC, DR†; Figures 2 and 3; 117-1985).

After the initial observation by John Mariani on 10 Sep, the bird was rediscovered on 14 Sep by Don Roberson and seen daily during high tides thereafter; it allowed close studies and ample photographic opportunities. The identification was confirmed (through photos) by Lars Jonsson of Sweden and Peter J. Grant of Great Britain. The Committee wishes to thank the owners of the Moonglow Dairy, Louis and Carol Calcagno, who graciously permitted enthusiastic crowds of birders on their property. The only previous record of this Eurasian species was of a juvenile at Bolinas 14-22 Sep 1983 (Roberson 1986). For superb plates and detailed information on the identification of small *Calidris* sandpipers, see Grant and Jonsson (1984) and Veit and Jonsson (1984).

WHITE-RUMPED SANDPIPER *Calidris fuscicollis* (8). One female was collected at the north end of the Salton Sea, RIV, 7 June 1969 (GMcC; #SDNHM 37201; 17-1985). Another was at the same locality on 30 May 1985 (REW; 112-1985). An adult in partial breeding plumage at the Salinas sewage ponds, MNT, 14-16 Sep 1985 (SNGH; WEG†, WEH†, JML, MJL, DR†, JW†; Figure 4; 136-1986) was judged to be probably the same bird seen some 7 miles downstream near the mouth of the Salinas R., MNT, on 18 Sep 1985 (PJM; 181-1985).

Figure 4. White-rumped Sandpiper. Salinas sewage ponds, Salinas, Monterey Co., California. 15 Sep 1985.

Photo by W. Ed Harper

Most records of this species are for the very late spring. The 1969 record was the first for the state. The record from MNT is only the second for fall for the state and one of the very few fall records for western North America; both of these were of breeding-plumaged adults.

CURLEW SANDPIPER *Calidris ferruginea* (12). One juvenile was west of Santa Maria, SBA, 16-20 Sep 1984 (LRBe; JLD, BWK, JML, PEL, MJL, JM, GMcC, DR, REW; 214-1984). A juvenile was at the north end of the Salton Sea, RIV, 13-16 Oct 1984 (GMcC; JLD, JS†; 224-1984). A juvenile was at the Salinas sewage ponds, MNT, 8-14 Sep 1985 (CT; SFB, EG†, WEG†, JML, MJL, JM, DR†, JW†; 118-1985).

All California records except one are for fall and involve about an equal number of adults and juveniles.

BUFF-BREASTED SANDPIPER *Tryngites subruficollis* (27). One juvenile was collected on a beach at Morro Bay, SLO, 14 Sep 1923 (#MVZ 43994; 207-1984). One was at Cadar Lane pond, Petaluma, SON, 25 Aug 1984 (BDP; 184-1984). Three juveniles were at the Salinas sewage ponds, MNT, 15-25 Sep 1984 (JML, MJL, DR; JBun, BEDe†, BGE†, ASH†, JM, NMcM; 225-1984. One juvenile at Abbotts Lagoon, Pt. Reyes NS, MRN, 24 Aug-13 Sep 1985 (DEQ; EG†, EM, DN†, BDP; 102-1985) and one juvenile at the Spaletta Plateau, Pt. Reyes NS, MRN, 14-29 Sep 1985 (LCB, JML, JM, BDP: 131-1985, 166-1985) were probably the same individuals, the two localities being very close to one another. This record was, by error, circulated and accepted twice under different record numbers.

Figure 5. Lesser Black-backed Gull, Red Hill Marina, south end of Salton Sea, Imperial Co., California, 20 Dec 1984.

Photo by Louis Bevier

Figure 6. Great Crested Flycatcher, Point Reyes National Seashore, Marin Co., California, 23 Sep 1985.

Photo by Richard Stallcup

Figure 7. Thick-billed Kingbird, Santa Ana Nature Center, Claremont, Los Angeles Co., California, 6 Nov 1984.

Photo by Daniel L. Guthrie

The dates of the sighting at Bodega Bay, SON, 12 Sep 1979 (previously accepted 53-1979; Luther et al. 1983) should be extended to 11-16 Sep 1979 (LCB).

The numbers of Buff-breasted Sandpipers at Pt. Reyes in the fall of 1985 are still unclear. The Committee has documentation of only one bird each from Abbotts Lagoon and the Spaletta Plateau, yet up to four and up to three were reported in *AB* 40:330 from each location, respectively. The Committee would greatly appreciate receiving details of the additional birds so that it may report the situation more accurately. This again illustrates the need for *all* observers to submit documentation of rarities, even those that they did not find and knew to have been present over an extended period.

The Morro Bay record cited above (Brooks 1924) was the first for the state. This species is now being found annually in small but varying numbers—some years being better than others. Nearly all records are of juveniles in fall.

LITTLE GULL *Larus minutus* (25). One adult was near Mecca, RIV, 16-21 Nov 1968 (GMcC, AS†; 233-1984). One first-winter bird was at Ferndale, HUM, 1 Jan 1984 (GSS; GSL; 27-1985). One juvenile was at Lake Elsinore, RIV, 3-5 Sep 1984 (GMcC; JLD, REW†; 213-1984). A wintering adult at the Stockton sewage ponds, SJ, 26 Oct 1984-24 Apr 1985 (JLD; 269-1984) is regarded as the same bird that has recurred there every winter since March 1979 (previously accepted; 21-1979, Luther et al. 1983; 85-1983, 93-1983, 1-1984, 42-1984, Roberson 1986), although more than one individual was present during some of these winters. See Roberson (1986) for a full listing of dates for each winter. A first-winter bird was at Salton City, IMP, 17 and 31 Jan 1985 (REM; JLD, CM†; 10-1985); it was looked for on some of the intervening dates but was not seen.

The adult near Mecca in 1968 established the first record of this species for California and western North America; its photo appeared on the cover of *AFN* (Feb 1969), and two other photos were published inside the issue. The juvenile cited above was the second in this plumage from California, the previous bird having been at Crescent City, DN, 15 Aug 1981 (Binford 1985). These sightings suggest the possibility of additional undiscovered nesting sites to the west of the known breeding locations around Hudson Bay and the Great Lakes (Godfrey 1986, A.O.U. 1983).

COMMON BLACK-HEADED GULL *Larus ridibundus* (11). A breeding-plumaged adult was at Irish Beach, near Manchester, MEN, 18-20 June 1984 (PAS; 166-1984). An immature was at the Stockton sewage ponds, SJ, 24 Mar-13 Apr 1985 (BDP; DGY; 43-1985).

LESSER BLACK-BACKED GULL *Larus fuscus* (2). One winter-plumaged adult was near Red Hill marina, south end of the Salton Sea, IMP, 18 Dec 1984-5 Jan 1985 (JLD; NBB, LRBe†, RAE, PEL, GMcC, DR†; Figure 5; 278-1984).

The previous record of this species for the state, for Roberts Lake, Seaside, MNT, 14 Jan 1978, was also of an adult (Binford 1978, Luther et al. 1979). An expert asked for analysis of the Salton Sea bird expressed misgivings, suggesting that the bill was too large for this species and that the dusky head flecking was not in the right location and might be staining of some sort. He suggested the bird might be a runt Yellow-footed Gull (*L. livens*). Despite these reservations the Committee accepted the record 10-0 on the second round, on the basis that the head flecking was well within the range of variation for this species and that the Yellow-footed was eliminated by wing tip pattern (visible in photos, a long tongue of gray on the eighth primary is absent in the Yellow-footed), bill shape, and overall size, the bird being described as clearly smaller than a Herring Gull (*L. argentatus*). The fact that the bird was still molting its primaries is correct for the Lesser Black-backed, which typically does not complete primary molt until mid-winter, quite unlike the Yellow-footed, which normally completes its molt by fall.

THICK-BILLED MURRE *Uria lomvia* (12). An weak adult female found on a beach at Pacific Grove, MNT, 27 Aug 1964 subsequently died (#PGMNH 2031A; 34-1985). An immature male was found freshly dead on a beach at Monterey, MNT, 22 Feb 1965 (#PGMNH 2041A; 35-1985). A breeding-plumaged adult was about 10 nautical miles north of Pt. Pinos, Monterey Bay, MNT, 8 Apr 1968 (VLY; 232-1984). One was ¼ to ½ mile off the Coast Guard wharf, Monterey, MNT, late Dec 1972-26 Jan 1973 (JLD; 30-1985). One was about 1 mile west of Asilomar Beach, Monterey Bay, MNT, 20 Oct 1985 (LCB, JGre, JMa†, RM†; 135-1985).

Record 32-1974 (Luther et al. 1979), previously accepted as "two, 14 Sep-10 Nov 1973, Monterey Bay," should be revised to read "two birds at Monterey, MNT, one present 14 Sep-10 Nov 1973, the second 18 Sep-10 Nov 1973."

Monterey is the site of nearly all California records of this species. For an account of records from the 1960s cited above see Yadon (1970). The 1968 bird was seen by five boatloads of birders. The bird seen in 1985 appeared to be in breeding plumage, but the ages of Thick-billed Murres can not be determined reliably in the field in late summer and possibly into the fall. Birkhead and Nettleship (1985) reported that 64% of the juvenile Thick-billed Murres were in a "summer" plumage, 25% showed "intermediate" characters, and only 11% were in a "winter" plumage. These birds fledged in that plumage so it is plausible that some may look that way into the fall.

PARAKEET AUKLET *Cyclorrhynchus psittacula* (25). One found dead at Zmudowski State Beach, MNT, *3 Mar* 1974 (#MLML 4896; 57-1985) was the first reported since 1955 and only the sixth since 1909 (including unreviewed records for 1937, 1944, and 1955). An account was published by Talent (1975). Note that the date in *AB* 28:688 and Roberson (1980) is incorrect; it was corrected by Roberson (1985).

Figure 8. Scissor-tailed Flycatcher, Oasis, Mono Co., California, 2 May 1985.

Photo by Jack Wilburn

BARRED OWL *Strix varia* (4). One was heard calling along Walker Rd., Jedediah Smith Redwoods State Park, DN, 6-25 May 1985 (RAE; 95-1985).

BROAD-BILLED HUMMINGBIRD *Cynanthus latirostris* (23). One male was at a feeder in San Diego, SD, 10 Nov 1961-mid Mar 1962 (GMcC; 32-1985). One male was in the Tijuana R. Valley, SD, 14 Oct 1962 (GMcC; 31-1985, 103-1986); it was, by error, circulated and accepted twice under two different numbers. One male was at a feeder in Redlands, SBE, 2 Jan-mid Feb 1964 (GMcC; 33-1985). One male at a feeder in Santa Barbara, SBA, 26 Oct 1983-7 Feb 1984 (Mr. and Mrs. H. C. Wills; 52-1984) was judged to be the same bird returning for its second winter (previously accepted 29-1983; Morlan 1985). One immature male was at the Carmel R. mouth, MNT, 29 Sep-2 Oct 1984 (KLH, DR, BT†; 229-1984).

The records listed above from the 1960s were all published by McCaskie (1970b). A black-and-white photo of the Redlands bird appears in that article but to date no transparency has been deposited in CBRC files. The bird at the Carmel R. mouth provided the second accepted record from northern California. It inadvertently was never published in *AB* but was published by Roberson (1985). This species now occurs nearly annually in southern California with almost all the records being for the fall and winter.

GREATER PEWEE *Contopus pertinax* (17). One collected at Brock Ranch, 20 miles east of Holtville, IMP, 29 Sep 1965 (#LACM 60645; 7-1986) was identified by K. L. Garrett as pertaining to the expected northern race, *C. p. pallidiventris*. One was on Pt. Loma, SD, 6-7 Oct 1984 (REW†; 52-1985). One was at Montecito, SBA, 10

Figure 9. Brown Shrike, Southeast Farallon Island, San Francisco Co., California, 20 Sep 1984.

Photo by R. Phil Henderson

Nov 1984-10 Mar 1985 (JLD; PEL, REW; 265-1984). One was at Presidio Park, San Diego, SD, 10 Nov 1984-14 Apr 1985 (REW; JLD, GMcC; 277-1984). One was at Decoto, Union City, ALA, 23 Dec 1984-7 Mar 1985 (RAE, AG†, KLH, JML, MJL, JM; 26-1985).

This species is now of nearly annual occurrence in southern California, the great majority of the records involving wintering birds. The record from Montecito is a first record for well-worked SBA; the one from Union City is only the third from northern California and establishes the northernmost record in North America.

DUSKY-CAPPED FLYCATCHER *Myiarchus tuberculifer* (10). One at La Jolla, SD, 8 Mar 1985 (LRBe†; GMcC, REW†; 49-1985) established the first record for SD.

GREAT CRESTED FLYCATCHER *Myiarchus crinitus* (12). One was collected on Southeast Farallon Island, SF, 25 Sep 1967 (#MVZ 158780; 205-1984). One was along Carpinteria Creek, Carpinteria, SBA, 19-20 Oct 1984 (LRBa; PEL; 264-1984). One was in Santa Monica, LA, 28 Oct 1984 (JA; 2-1985). One was at Pt. Reyes NS (Lighthouse), MRN, 23 Sep 1985 (RS†; Figure 6; 134-1985).

The specimen from the Farallones constitutes the first record for California; another bird banded there that day (DeSante and Ainley 1980) is currently in circulation. This species is now of nearly annual occurrence in California, but because its visits are so brief, it is one of the most difficult vagrants for birders to chase down. All records are from the coast in fall.

THICK-BILLED KINGBIRD *Tyrannus crassirostris* (6). One was in the Tijuana R. Valley, SD, 19 Oct 1965 (GMcC; 38-1986). One was at Bonita, SD, 26-27 Dec 1966 (GMcC; †SDNHM; 37-1986). One was at Rancho Santa Ana Botanic Gardens, Claremont, LA, 3 Nov 1984-10 May 1985 (JLD, DLG†, GMcC, REW†; Figure 7; 266-1984).

The Tijuana R. Valley bird was the first for the state. The one from Claremont was a first for LA.

SCISSOR-TAILED FLYCATCHER *Tyrannus forficatus* (23). One male collected along Elizabeth Lake Rd. beyond Bouquet Canyon near Saugus, LA, 26 June 1915 (#MVZ 31346; 203-1984) established the first state record (Swarth 1915). One 6 miles east of Saugus, LA, 2 Oct 1937 (82-1985) was published by Philip (1938). One collected at Ferndale, HUM, 1 Nov 1957 (#CAS 60368; 163-1984) was published by Yocum and Harris (1975). An adult male collected at Solana Beach, SD, 22 Nov 1963 (GMcC; #SDNHM 30769; 47-1986) was published by McCaskie et al. (1967a). A male was collected at Hopland, MEN, 27 Apr 1966 (#MVZ 156692; 202-1984). One was at Furnace Creek Ranch, Death Valley NM, INY, 23 May 1970 (CSL†, GMcC: 54-1986). One was at Colusa NWR, COL, 18 Oct 1970 (WGl†; 52-1986). One was on Santa Barbara Island, Channel Islands NM, SBA, 23 May 1975 (HLJ†; 53-1986). One was at the Butte Valley Wildlife Area, SIS, 15-16 June 1984 (BWo†; 121-1985). One was in the Carmel R. Valley, MNT, 3-5 May 1985 (AKY; 91-1985). One was at Oasis, MNO, 25-27 May 1985 (BLaB; GMcC, DR, REW, JW†; Figure 8; 56-1985). One was at various spots in Pt. Reyes NS, MRN, 29 May-8 June 1985 (DAH; LCB, MGro, JTh, DT; 54-1985); the majority of the Committee felt that only one bird was involved.

EURASIAN SKYLARK *Alauda arvensis* (1). One was on the Spaletta Plateau, Pt. Reyes NS, MRN, 27 Oct 1984-17 Feb 1985 (JM; AG†, MJL; 256-1984). This was the seventh and last winter for a bird that first appeared in Dec 1978 (previously accepted 4-1979, Luther 1980: 93-1981, Binford 1985). Presumably this individual wintered somewhere on Pt. Reyes during the winter of 1983-1984 but no definite

sightings were recorded. For a full discussion of this record, with notes on skylark identification and systematics, see Morlan and Erickson (1983).

BLUE JAY *Cyanocitta cristata* (9). One came to a feeder at South Lake Tahoe, ED, early Nov 1983-Mar 1984 (BSo†; 185-1984). The bird came to the feeder of Clair and Cap Capistrant and was loosely associating with a group of up to 50 Steller's Jays (*C. stelleri*). The bird was recorded on the South Lake Tahoe Christmas Bird Count (*AB* 38:811) but has not been otherwise published.

NORTHERN WHEATEAR *Oenanthe oenanthe* (2). A male was collected on Southeast Farallon Island, SF, 11 June 1971 (#CAS 68566; 154-1984). The specimen, a first state record, was examined by Charles Vaurie (AMNH) and found to be too worn to be identified to race (Manuwal and Lewis 1972).

VEERY *Catharus fuscescens* (4). One immature at Kelso, SBE, 5 Nov 1978 (SWC†; 35-1984) established the third state record and occurred on a date very late for anywhere in North America.

GRAY-CHEEKED THRUSH *Catharus minimus* (3). One immature male was collected on Southeast Farallon Island, SF, 3 Oct 1970 (#CAS 68501; 161-1984). R. Laybourne determined the specimen to be of the expected widespread race *C. m. minimus*. Establishing the first state record, it was one of two Gray-cheeked Thrushes recorded that day (DeSante and Ainley 1980); the other record remains unreviewed by the Committee.

GRAY CATBIRD *Dumetella carolinensis* (22). One in the Tijuana R. Valley, SD, 7-8 Nov 1964 (GMcC; #SDNHM 35095; 45-1986) was collected on the last date. One was at Pacific Grove, MNT, 30 Sep 1968 (AB; 36-1985). One was at Stovepipe Wells, Death Valley NM, INY, 4 Oct 1984 (REW†; 12-1985). One was at Iron Mountain Pump Station, SBE, 3-*10 Nov* (GMcC; 275-1984). One was on Southeast Farallon Island, SF, 29 May 1985 (PP; 67-1985). One was at Oasis, MNO, *29 May* 1985 (REW; 113-1985).

The record cited above from the Tijuana R. Valley in 1964 was published by McCaskie et al. (1967b). According to Unitt (1984), Amadeo Rea assigned the specimen to the darker eastern race, *D. c. carolinensis*, though some sources, such as the A. O. U. (1957), list the species as monotypic.

RED-THROATED PIPIT *Anthus cervinus* (31). At least twelve (including one female collected on 13 Oct) were in the Tijuana R. Valley, SD, 12-27 Oct 1964 (GMcC; #SDNHM 35097; 31-1986). A minimum of ten (including one immature male collected on 19 Oct) were in the same area 9-30 Oct 1966 (GMcC; #LACM 46029; 32-1986). Up to ten were there 22 Oct-*4 Nov* 1967 (GMcC; 33-1986), the last date coming from Unitt (1984). One was at the Salinas sewage ponds, MNT, 29 Sep 1984 (DR; 226-1984).

The flock in 1964 established the first state record (McCaskie 1966) and included one very red-throated bird that was certainly an adult and likely a male. The bird at the Salinas sewage ponds established the first record for well-worked MNT. This species is now nearly annual in fall from along the coast, but where they go is a mystery; there is one winter specimen (USNM) from the southern tip of Baja California, Mexico, collected on 26 Jan 1883 (A.O.U. 1957); to date, there are no spring records for North America outside Alaska.

SPRAGUE'S PIPIT *Anthus spragueii* (14). One was in the Patterson fields, Goleta, SBA, 21-22 Sep 1984 (BEDa; PEL, REW†; 242-1984). One was near Lakeview, RIV, 2-17 Mar 1985 (JML, MJL, GMcC; 73-1985).

Both of these records were county firsts. The SBA bird was in very worn plumage and may well have been an adult; it establishes the earliest fall record for the state.

BROWN SHRIKE *Lanius cristatus* (1). One was on Southeast Farallon Island, SF, 20 Sep 1984 (RPH†, PP; Figure 9; 261-1984). This bird was trapped, photographed, and measured, and various feathers were retained (#CAS 71593). The bird was clearly a Palearctic shrike of some type, and in his submission of a record of a Brown Shrike, Peter Pyle clearly eliminated that species' close relatives, the Red-backed (*L. collurio*) and Isabelline Shrikes (*L. isabellinus*). The fact that two other Asiatic shrikes, the Bull-headed (*L. bucephalus*) and Tiger (*L. tigrinus*), were not initially considered (the latter species being highly migratory) caused some Committee members to raise questions. These questions were addressed by Pyle in additional correspondence. Basically, the Bull-headed Shrike is eliminated because it has rufous-chestnut ear coverts of the same color as the crown. The Tiger Shrike is eliminated because it has a larger bill, duller and less contrasting ear coverts, and a shorter tail, a conclusion endorsed by Philip D. Round, who examined photos; Round is very familiar with the Tiger Shrike as a migrant in Thailand.

It was suggested that the bird was of the nominate northern race, *L. c. cristatus*, but Ben F. King and Richard L. Zusi, who also reviewed the record, opined that the question is best left unresolved without the preservation of a specimen. Certainly *cristatus* would be the most likely race, but the only specimen taken in North America (Shemya Island, western Aleutians, Alaska, 10 Oct 1978) was identified as belonging to a more southerly race, *lucionensis* (Gibson 1981). However, the Alaska specimen is an immature, and Medway (1970) found immatures not to be identifiable to race, even in the hand.Therefore the Alaska specimen should be reexamined.

The bird on Southeast Farallon establishes the first record for California and for North America away from Alaska, where there are now four published records (King et al. 1978, Gibson 1981, *AB* 38:235, *AB* 38:948).

WHITE-EYED VIREO *Vireo griseus* (11). One was at Huntington Beach Central Park, ORA, 21-28 May 1985 (BEDa; 116-1985). A singing bird was at Franks Valley, 1 mile north of Muir Beach, MRN, 26 May-15 June 1985 (DAH; LCB, JM, BDP; 53-1985).

This is a casual visitor to California with almost all records for late spring.

YELLOW-THROATED VIREO *Vireo flavifrons* (16). One was at Oasis, MNO, 18 May 1985 (LK; JML, MJL; 72-1985). One was found dead by Mary Yegella under an oak tree near the intersection of Tierra Grande Rd. and Carmel Valley Rd., Carmel Valley, MNT, 23 Aug 1981 (JLD; #PGMNH; 25-1985). One was at Huntington Beach Central Park, ORA, 25-27 May 1985 (LRH; 55-1985).

PHILADELPHIA VIREO *Vireo philadelphicus* (49). One collected in the Tijuana R. Valley, SD, 9 Oct 1965 (GMcC; #SDNHM 35511; 29-1986) established a first state record (McCaskie 1968). One collected at Fairhaven, HUM, 16 Sep 1967 (#MVZ 15878; 206-1984) was published by Yocum and Harris (1975). Another was collected on Pt. Loma, SD, 9 Nov 1969 (#SDNHM 37390; 14-1985). One was at the Carmel R. mouth, MNT, 7 Oct 1984 (GMcC; 220-1984), rather than 6 Oct (Roberson 1985). One at Pt. Loma, SD, 11 Oct 1984 (REW; 240-1984) is here published for the first time, being inadvertently left out of the seasonal report in *AB*. One was at Pt. Reyes NS (New Willows), MRN, 29-30 Sep 1985 (LCB, JML, MJL, JM, BDP; 132-1985).

BLUE-WINGED WARBLER *Vermivora pinus* (3). A singing male made a typically brief appearance in the willows on the SW side of Bridgeport Lake, MNO, 18 June 1984 (RS; 45-1985).

GOLDEN-WINGED WARBLER *Vermivora chrysoptera* (26). A singing male was at Carpinteria Creek, Carpinteria, SBA, 1-2 June 1984 (TEW; DLD; 252-1984). A male at La Jolla, SD, 6-12 Oct 1984 (GMcC, REW†; 219-1984) established a first, and long overdue, record for SD. A singing male was at Oasis, MNO, 23 May 1985 (JLD; 86-1985).

BLUE-WINGED × GOLDEN-WINGED WARBLER *Vermivora pinus* × *V. chrysoptera* (2). One was found dead at the Westwood sewage ponds, LAS, 3 July 1984 (HG; #MVZ 169149). The specimen was sent to Kenneth C. Parkes, who stated that the bird should be placed in the category of "heterozygous Golden-wing" (see Parkes 1951), with a genotype WwSspp (note that there is a typographical error in the caption to the plate in this paper; the heterozygous Golden-wing genotype is erroneously given as WwSsPP). He comments that "this genotype can be obtained by various backcrosses, such as between an F_1 'Brewster's' and a Golden-winged Warbler." He felt the bird was about ¾ Golden-winged and ¼ Blue-winged.

YELLOW-THROATED WARBLER *Dendroica dominica* (39). One was at Pt. Loma, SD, 15 Oct-5 Nov 1969 (AMC†, GMcC; 58-1986). One was in the Tijuana R. Valley, SD, 3 Oct 1976 (NBB; 90-1985). One was at Morongo Valley, SBE, 23-24 Apr 1982 (EAC†; 49-1986). One was at Clear Creek Outdoor Education Center, 10 miles N of La Cañada, LA, *10-11 May* 1982 (HP†; 250-1984). One was at Carpinteria Creek, Carpinteria, SBA, 2-3 June 1984 (DLD; DB, CM; 251-1984). One was along the Salinas R., near Salinas, MNT, *8-11 Nov* 1984 (JML, MJL, BWe; 272-1984). One was at Olema Ranch Campground, Olema, MRN, 12 Dec 1984-12 Jan 1985 (RS; LCB, JE, JLD, BDP; 270-1984). One, probably a female, was at Oasis, MNO, 29-30 May 1985 (REW; JML, MJL; 71-1985).

The Carpinteria and Oasis birds showed the characters of the western race, *D. d. albilora*. The bird on Pt. Loma was initially trapped and measured, and the yellow lores and particularly the long bill (culmen = 14.1 mm) indicated the more easterly nominate race, *dominica*, although the very localized and poorly differentiated *stoddardi* was not eliminated. This record and the above conclusions were published by Craig (1972) and Unitt (1984) although the initial date of observation (14 Oct) is in error in both publications as indicated by the date written on a piece of paper photographed behind the bird. The Olema bird also showed the characters of nominate *dominica* (or *stoddardi*), possessing distinctly yellow lores, a yellow chin up to the bill, and a very long bill. These are the only two state records of individuals showing the characters of this race, and interestingly they are also from the late fall/early winter period. For additional details on distribution and characters separating the races see Baird (1958).

GRACE'S WARBLER *Dendroica graciae* (15). One on Oak Road in Montecito, SBA, 4 Nov 1980-28 Mar 1981 (PEL, GMcC; 3-1985) had returned for its second winter; this long-lived bird (previously accepted 23-1980, Binford 1983; 114-1984, Roberson 1986) returned for a sixth winter 7 Oct 1984-23 Mar 1985 (JLD, PEL, GMcC, BDP, DR, REW†; 221-1984). One immature was on Pt. Loma, SD, 11-12 Oct 1984 (REW; GMcC; 222-1984). An immature was near the city hall in Carpinteria, SBA, 12-13 Oct 1984 (LRBa; JLD, PEL; 263-1984). A duller bird, clearly different from the adult male wintering less than a mile away on Oak Rd., was on Summit Rd., Montecito, SBA, 21 Dec 1984-25 Feb 1985 (PEL; JLD, GMcC, DR, REW; 5-1985). A male was in Ventura, VEN, 30 Dec 1984-3 Mar 1985 (JGra; JLD, PEL, CM, REW; 6-1985); a majority of the Committee decided that there was likely only one bird, although two were initially reported.

The above records fit the pattern of coastal fall migrants and wintering birds. All four of the wintering birds have occurred in planted pines (mainly Monterey Pines, *Pinus radiata*, which, at least in the Montecito area, are dying out).

PINE WARBLER *Dendroica pinus* (10). One immature female was in the Tijuana R. Valley, SD, 4-6 Nov 1984 (GMcC, REW; 276-1984).

CERULEAN WARBLER *Dendroica cerulea* (8). A singing male at Central Park, California City, KER, 17 May 1985 (JCW; MOC; 106-1985) represents only the third spring record, the previous ones being of a female at Oasis, MNO, 27 May 1974 (Luther et al. 1979) and another female on Pt. Loma, SD, 26-27 May 1979 (Luther et al. 1983).

PROTHONOTARY WARBLER *Protonotaria citrea* (42). A male was collected 1 mile S and 8 miles E of Shandon, SLO, 22 May 1963 (#MVZ 151085; 201-1984). A male was at Morro Bay State Park, SLO, 2-6 Oct 1966 (NBB; EAP; 59-1986). One was at Furnace Creek Ranch, Death Valley NM, INY, 14 May 1984 (REM; 109-1985). A female was at Oceano Campground, Pismo Beach State Park, SLO, 1-7 Sep 1984 (BSch; JLD; 267-1984). A male was near Oxnard, VEN, 16-18 Sep 1984 (JLD; 268-1984). Another male was on Pt. Loma, SD, 25 Sep. 1984 (REW; 239-1984). A male was at Scotty's Castle, Death Valley NM, INY, 3 Oct 1984 (REW; 241-1984).

WORM-EATING WARBLER *Helmitheros vermivorus* (28). An immature male was found dead on a street in Chula Vista, SD, 18 Sep 1960 (#SDNHM 30219; 44-1986). One was at Pacific Grove, MNT 25 Oct 1969 (WR; AB; 61-1985). One was at Nojoqui Falls County Park, SBA, 1 Dec 1984 (HC; AS; 4-1985).

The Chula Vista bird was the first recorded for California (Huey 1961).

LOUISIANA WATERTHRUSH *Seiurus motacilla* (2). One was at Deep Springs College, Deep Springs Valley, INY, 7 Aug 1985 (JLD†; 130-1985). The only previous state record (Miller 1908) was for Mecca, RIV, 17 Aug 1908 and previously accepted (Roberson 1986). The August date fits the very early migration of this species, and there are a number of late July and early August records for southern Arizona.

KENTUCKY WARBLER *Oporornis formosus* (16). A male was at California City, KER, 19 May 1985 (MH; MOC, JCW; 105-1986). A singing male was at Fort Piute, SBE, 22 May 1985 (BWK; 98-1985). A female was at Mojave, KER, 25 May 1985 (JCW; MH; 104-1985). A singing male near Rodeo Lagoon, Golden Gate National Recreation Area, MRN, 13 June 1985 (ASH; 84-1985) is published here for the first time.

CONNECTICUT WARBLER *Oporornis agilis* (18). A female was trapped and banded on Pt. Loma, SD, 4 June 1968 (VPJ†; GMcC; 35-1968; McCaskie 1970c). One was found dead on Dearborn Park Rd., Pescadero, SM, "Oct 1975" (#MVZ 64784; 204-1984). One was at Pt. Reyes NS (Nunes), MRN, 7 Oct 1983 (RS; JE; 127-1985). One was at Oceano Campground, Pismo Beach State Park, SLO, 1-2 Oct 1984 (BSch; JLD, CM, JEM; 217-1984). One was at Pt. Reyes NS (Fish Docks), MRN, 14 Oct 1984 (DGY; JM; 259-1984).

The Pt. Loma bird provides the only spring record away from the Farallones. The June date fits the limited pattern of the other spring records. The bird from Pt. Reyes in 1984 established the latest fall date for the state.

MOURNING WARBLER *Oporornis philadelphia* (20). One was at the Big Sur R. mouth, MNT, 5 Oct 1984 (LK; JML, MJL; 271-1984).

*PAINTED REDSTART *Myioborus pictus* (5*). One was at Zaca Lake, SBA, 19 Oct 1984 (PC; 262-1984). This species is no longer on the Review List.

SCARLET TANAGER *Piranga olivacea* (31). One found dead on San Nicolas Island, VEN, 30 Oct 1929 (#MVZ 54485; 195-1984) was thought to have been dead about "two to three weeks." A female was at Tustin, ORA, 15 Nov 1982 (WGo; 17-1983). An immature male was on Pt. Loma, SD, 21 Oct 1984 (REW†; 244-1984). Another male was on Pt. Loma, SD, 23 Oct 1984 (REW; 245-1984).

A record for Palo Alto, SCL, 24 May 1972 (previously accepted 66-1972; Winter 1973) was assigned to SM in error.

The record for San Nicolas Island cited above was the first for California (Miller and Miller 1930). The newly accepted records, all from late fall in southern California, fit the pattern for the majority of the records. There are only a few northern California records.

PYRRHULOXIA *Cardinalis sinuatus* (7). One male was near Calipatria, IMP, 17 Dec 1972-19 Feb 1973 (JBut†, GMcC; 143-1985). A male at Heise Springs, north of Westmorland, IMP, 22 Jan-23 Mar 1973 (GMcC; 79-1984) had returned for its third winter; the full dates for the previous winters were 24 Feb-*8 Mar* 1971 and 31 Dec 1971-27 Mar 1972 (previously accepted, but with incomplete dates for the first winter; 1-1972, 2-1972; Winter 1973). Two, one male and one female, were at Corona, RIV, 23 July 1982 (MM; 13-1983).

It is sad to report that Heise Springs, formerly a fine oasis that sheltered a wide variety of birds, has become an agricultural field. Whether the birds at Corona represented a natural occurrence was intensively debated, as the area is on the coastal slope, although not far from the desert. The matter is complicated by the absence of a clear pattern of vagrancy in the deserts to the east. Despite some misgivings, the Committee passed the record 9-1 on the fourth and final round. Data on this species' status in captivity would help the Committee's assessment of future records.

PAINTED BUNTING *Passerina ciris* (11). An immature male was collected in the Tijuana R. Valley, SD, 10 Nov 1962 (GMcC; #SDNHM 30488; 41-1986). Another immature was collected in the same area on 28 Sep 1963 (GMcC; #SDNHM 30783; 40-1986).

These specimens represent the first records for California (McCaskie and Banks 1964, McCaskie et al. 1967c). R. W. Storer assigned them to the western race, *P. c. pallidior* (McCaskie et al. 1967c).

CASSIN'S SPARROW *Aimophila cassinii* (10). A singing male at the South Tufa area on the south edge of Mono Lake, MNO, *17-23 Jun* 1984 (SEF†, JM, MW†; 197-1984) represents the most northerly record from the interior of California.

LE CONTE'S SPARROW *Ammodramus leconteii* (8). One collected on Southeast Farallon Island, SF, 13 Oct 1970 (#CAS 68505; 160-1984) was the first state record. Records from California through 1974 were reviewed by McCaskie (1975).

*SHARP-TAILED SPARROW *Ammodramus caudacutus* (27*). Two were at Recreation Gun Club, near Venice, LA, 16 Jan-12 Feb 1944 (83-1985). One was collected at the Tijuana R. mouth, SD, 2 Nov 1963 (GMcC; #SDNHM 30788; 46-1986). One at the mouth of Pine Gulch Creek, Bolinas, MRN, 9 Nov-*22 Dec* 1984 (LCB, SEF†, JM; 255-1984) is regarded as likely one of the birds that previously wintered at that spot (previously accepted 222-1980, Binford 1985; 120-1982, Morlan 1985).

The account of the birds at Venice was published by Cogswell (1944). The entire salt marsh there has long since been developed. The specimen from SD was identified by McCaskie et al. (1967c) and Unitt (1984) as the western race, *A. c. nelsoni*, as all other California specimens have been (Grinnell and Miller 1944). This species is no longer on the Review List.

SNOW BUNTING *Plectrophenax nivalis* (17). One was at Scotty's Castle, Death Valley NM, INY, 14 Nov 1970 (GMcC; †SDNHM; 51-1986). One was at Pt. Reyes NS ("Drake's Corners"), MRN, *4-24 Nov* 1982 (AG†, JM; 260-1984). One was at Crescent City, DN, 20-21 Nov 1984 (RAE, GSL; 273-1984).

Record 168-1977, previously accepted (Luther 1980) as "at least one and probably four different birds from 8 Dec 1972-5 Jan 1973" should be revised to two birds, one present 8 Dec 1972-5 Jan 1973 and joined by a second bird 11 Dec 1972-5 Jan 1973.

Most records are from the north coast in late fall and early winter and these are no exception. Although some of these were assigned to sex, this is a difficult task in fall and early winter when birds are not in the hand. See Svensson (1984) and Pyle et al. (1987) for more detailed information on the ageing and sexing of Snow Buntings.

COMMON GRACKLE *Quiscalus quiscula* (12). One was at Arcata, HUM, 11 Oct 1975 (TS, SS; 124-1985). *AB* 30:123 stated that the bird was photographed, but no transparencies are in our files. This is one of the few accepted fall records, the great preponderance of records being for late spring.

STREAK-BACKED ORIOLE *Icterus pustulatus* (3). An immature male was collected at Murray Dam, Lake Murray, near La Mesa, SD, 1 May 1931 (#SDNHM 14521; 43-1986). One, believed to be an immature male, was in La Jolla, SD, 10 Dec 1984-29 Apr 1985 (REW†, JLD, JML, MJL, BWK, GMcC; 22-1985).

The specimen documented the first record for the United States (Huey 1931). This bird may have wintered locally, a theory supported by the late departure of the La Jolla bird. Richard Webster found the La Jolla individual on 24 Feb 1985. While searching for it again on a subsequent day, he found it coming to a feeder at the home of Richard Eppley, who had been seeing it regularly since 10 Dec and had independently identified it.

CORRIGENDUM FOR SPECIES NO LONGER REVIEWED

*SHARP-TAILED SANDPIPER *Calidris acuminata* (20*). Record 80-1979, previously accepted (Binford 1985) as "two juveniles east of Dumbarton Bridge, Palo Alto, San Mateo Co.," should be revised to read: "two juveniles on the salt ponds on the NW side of Highway 84, just west of the west end of the Dumbarton Bridge, Menlo Park, SM." These ponds are (and were then) part of the San Francisco Bay NWR. This species is no longer on the Review List.

UNACCEPTED RECORDS, identification questionable

YELLOW-BILLED LOON *Gavia adamsii*. Two breeding-plumaged birds at Erdent Beach Cliffs just south of Crescent City, DN, 16 June 1985 (111-1985).

These birds were seen by a careful and experienced observer, but the majority of the Committee felt that two breeding-plumaged birds together on this date would be extraordinary, and the distances at which they were observed were too great to allow conclusive identification.

STREAKED SHEARWATER *Calonectris leucomelas*. One about 1 mile off Manresa Beach, Monterey Bay, SCZ, 5 Sep 1984 (211-1985). The Committee thought this bird, seen only briefly, was some type of aberrant shearwater, perhaps a leucistic Buller's Shearwater (*Puffinus bulleri*) like one seen on Monterey Bay in Sep 1982 and initially identified as a Streaked. Characters reported for the bird off Manresa Beach that were not right for Streaked included a faint dark "M" dorsal pat-

UNACCEPTED RECORDS, identification questionable, Cont.

tern, a lack of pale tips on the back and scapular feathers, and no dark streaks noted on the head and face. Additionally, there was no description of the underwing coverts, and the wing beat seemed too rapid.

MANX SHEARWATER *Puffinus puffinus*. One on Monterey Bay, MNT, 27 Aug 1977 (29-1979). This record was circulated after the A.O.U. (1983) separated the Black-vented Shearwater (*P. opisthomelas*) from the rest of the Manx Shearwater complex. The record was submitted as the nominate race of Manx Shearwater (*P. p. puffinus*) and after three rounds was rejected 3-7.

This record prompted some of the Committee's most acrimonious correspondence ever. The five past or present Committee members who saw this bird and submitted documentation had widely divergent opinions on the length of time the bird was under observation, the path of flight past the boat, and the sky conditions at the time of observation (dense fog or clear). Some discrepancies can be explained by the fact that the debate took place some 6 or 7 years after the sighting, but it also illustrates the need for a high standard of evidence in the form of a specimen or photo, especially of difficult-to-identify species.

Despite the controversy, the Committee agreed that this was a most interesting observation. The white undertail coverts, clearly noted by all observers, and the rather sharp demarcation between the black dorsal and white ventral coloration almost certainly eliminate Black-vented Shearwater. There was agreement that the bird represented probably either the nominate race of Manx Shearwater or the Newell's Shearwater of Hawaii, considered a race of Townsend's Shearwater (*P. auricularis newelli*) by the A. O. U. Checklist (1983). Those voting in favor of the record felt that some of the characters noted at the time (underwing and undertail pattern and tail length; see below) point to Manx, but others commented that, at the time, these characters were not critically examined nor were they known to be distinctive. Given the species' extreme rarity, the difficulty of the identification, and the intense debate over the circumstances of the observation by the reporting observers, the majority voted against the record.

Although nominate *puffinus* is restricted to the Atlantic, where it is a transequatorial migrant, it could appear off California or elsewhere in the North Pacific, if it entered the wrong ocean. There are single definite records of Manx Shearwaters of the nominate race from Australia (Kinsky and Fowler 1973a) and New Zealand (Kinsky and Fowler, 1973b); the one from Australia involved a bird that had been banded in Great Britain! Newell's Shearwater nests in the Hawaiian Islands (primarily on Kauai) and ranges north to about 40°N latitude in the Central Pacific (R. L. Pitman in litt.), withdrawing south and east in winter (A.O.U. 1983 and Pitman 1986). Both seem possible off California, although Newell's seems unlikely in the cold waters off the south coast of Alaska, where there are at least four summer reports of white-vented Manx-like shearwaters (Kessel and Gibson 1978, Roberson 1980, *AB* 40:1242).

Additional white-vented shearwaters will probably be seen off California and the Committee hopes they will be documented by a specimen, photo, or, at least, a detailed description based upon extensive views. Observers should concentrate on the exact color of the upperparts (blacker in Newell's), length of tail (longer in Newell's), and underwing pattern (more contrast of flight feathers to underwing in Newell's), although the usefulness of this last character might be subject to variations in lighting (e.g., a Pink-footed Shearwater, *P. creatopus*, appears to have a much whiter underwing in very bright light). One of the best features, if the bird is seen extremely well, is the face pattern. Nominate Manx always has some dusky flecking in the white areas of the face, while Newell's shows no such flecking and has a sharper contrast between the black and white regions. Many, if not most, Newell's also show some black

UNACCEPTED RECORDS, identification questionable, Cont.

feathers in the undertail coverts; their vent still looks mostly white in the field, but the dark feathers can also be seen (P. Pyle in litt.). Observers are cautioned about the great variation in the amount of dusky on the underparts of the Black-vented Shearwater. Some birds appear quite white below, although all should show at least some dark to the undertail coverts. For more details on the identification, distribution, and systematics of certain members of the Manx complex see Harrison (1983) and Jehl (1982).

This record was published with equivocal conclusions in *AB* 32:251, as the nominate race of Manx Shearwater by Roberson (1980) and as Manx/Townsend's by Roberson (1985).

BLACK-BELLIED WHISTLING-DUCK *Dendrocygna autumnalis*. Record 24-1982 (27 Sep 1969, Oroville, BUT), previously rejected (Morlan 1985) as "origin questionable," should be revised to unaccepted, identification questionable. Since the record received more than one reject vote on the identification issue, it was not necessary to address the natural occurrence issue; five members questioned the natural occurrence.

TRUMPETER SWAN *Cygnus buccinator*. One at the Empire Tract, 14 miles NW of Stockton, SJ, 21 Jan 1963 (190-1984). Three adults at Pt. Año Nuevo, SM, 29 Dec 1968 (191-1984). One "sub-adult" on south Humboldt Bay, HUM, 2 Mar 1969 (192-1984).

The bird from SJ was published by Morton and Tate (1963). The three at Pt. Año Nuevo were published as only "possible" in *AFN* 23:515, and the one from Humboldt Bay had been published as "probable" in *AFN* 23:515.

TUFTED DUCK *Aythya fuligula*. One male on a farm pond along State Highway 12 near Clements, SJ, 16-28 Jan 1984 (48-1984). This bird showed extensive gray scaling across the back, which caused the observers and the Committee to question whether it was a pure Tufted Duck. After two circulations the record was rejected 2-8. Most felt the bird may have been a hybrid Tufted Duck × Greater Scaup (*A. marila*), Tufted Duck × scaup sp., or possibly a Lesser Scaup (*A. affinis*) × Ring-necked Duck (*A. collaris*). The record was published as a "possible Tufted Duck × Lesser Scaup" in *AB* 38:352, a hybrid combination that has not yet been definitively recorded.

Because of the extent of duck hybridization, it is important for observers of a Tufted Duck, or any other rare duck, to check for *all* the characters of the species. For more information on *Aythya* duck hybridization, especially between the Tufted Duck and Greater Scaup, see Gillham et al. (1966).

WOOD SANDPIPER *Tringa glareola*. One on Southeast Farallon Island, SF, 20 Aug 1985 (176-1985). This bird was seen by an experienced observer who knew the species from previous field experience. The views were mainly in flight, but distinctive vocalizations were heard. The majority of the Committee felt that the bird was probably this species, but wanted a more convincing record before placing the species on the State List. The Committee is usually reluctant to accept first state records from single observers; poor views (as here) will almost certainly doom such a report. The record was published in *AB* 40:330.

UPLAND SANDPIPER *Bartramia longicauda*. One near Davenport, SCZ, 3-4 Sep 1983 (61-1983). This record was finally rejected by the narrowest of margins (8-2) on the fourth and final round (a 9-1 vote is required for acceptance). Several members expressed concern about the brevity of the views and the confusion caused by the presence of several Whimbrels (*Numenius phaeopus*) in the same artichoke fields. The record was published in *AB* 40:330.

UNACCEPTED RECORDS, identification questionable, Cont.

LITTLE GULL *Larus minutus*. One at the Carmel R. mouth, MNT, 27 Dec 1977 (19-1985). This sighting was accepted on the Monterey Peninsula Christmas Bird Count (*AB* 32:870-871).

BOREAL OWL *Aegolius funereus*. One heard calling at the south end of Echo Lake, ED, on the night of 21-22 Dec 1985 (169-1986). The locality is near Echo Summit, 1 mile north of U.S. Highway 50 at 7300 feet elevation. The observer was camping when he heard the bird give four to six series of calls, one from very close, the others farther away. The individual notes were given "forcefully" and delivered in rapid succession. The strong wind and estimated 10°F temperature discouraged any attempt to find the bird, and no calls were heard during another visit on the night of 16-17 Feb 1986. After listening to the Peterson recording of Boreal Owl, the observer became more convinced, the recording having the same ringing, echo quality that he remembered hearing at Echo Lake.

All Committee members felt this record was very interesting, but since the bird called only five times and no voice recording was made, it was felt that the evidence was insufficient to add the species to the state list. Many suspect that Boreal Owls will eventually be found in the Sierra Nevada, as they have been found recently in a number of western mountain ranges south to at least northeastern Oregon and northern New Mexico. Efforts to locate this species should take place during the height of the calling season (full moon said to be best) in late winter or early spring, when territorial birds may sing all night. There has also been success in detecting this species during the late fall before mountain snows restrict access to these areas. The exact locality of this observation is reported here to stimulate further investigation.

BROAD-BILLED HUMMINGBIRD *Cynanthus latirostris*. One male at Pacific Grove, MNT, 21 Apr 1969 (228-1984). Although seen by an experienced observer, the view was brief and the bird was viewed without binoculars, though at very close range. The description was felt by the majority of the Committee to be inadequate, and the record failed 4-6 on the second round. Committee members noted that this observation was from northern California, where the species is accidental, and that the bird was seen in spring, an unlikely season for Broad-billed Hummingbirds to be in the state (almost all accepted records are from the fall and winter). The record was published in *AFN* 23:622, McCaskie et al. (1979), and Roberson (1980, 1985).

PHILADELPHIA VIREO *Vireo philadelphicus*. One at Cold Creek Canyon, YOL, on 15 Apr 1981 (125-1985). One at Furnace Creek Ranch, Death Valley NM, INY, 8 Nov 1981 (165-1984). The Death Valley bird was published in *AB* 36:219.

PROTHONOTARY WARBLER *Protonotaria citrea*. One at Goleta, SBA, 5 Oct 1983 (129-1983). Is was published in *AB* 38:248.

CONNECTICUT WARBLER *Oporornis agilis*. One at Lanphere Dunes, HUM, 24 Sep 1984 (77-1985), was published in *AB* 39:100.

COMMON GRACKLE *Quiscalus quiscula*. One at California City, KER 13 May 1984 (254-1984). This record was initially submitted without photos and received a nearly passing 8-2 vote on the first round. This came as a surprise to the original observers, who had already lost faith in the identification. Their misgivings were included in additional evidence that included two photos. The record failed unanimously on the next round.

The photos do show an odd black bird with a large and slightly hooked bill. Opinions on its identity ranged from a Brewer's Blackbird (*Euphagus cyanocephalus*) with a

UNACCEPTED RECORDS, identification questionable, Cont.

deformed bill to a Great-tailed Grackle (*Q. mexicanus*) with a partially grown tail or possibly a hybrid Brewer's Blackbird × Great-tailed Grackle (both species nest at this locality). The observers felt the bird was decidedly larger than the accompanying Brewer's Blackbirds. It was essentially entirely blackish, eliminating the Bronzed Grackle (*Q. q. versicolor*) from consideration; to date all Common Grackles known from California have shown the charcteristics of this race.

UNACCEPTED RECORDS, natural occurrence questionable (identification accepted)

LAYSAN ALBATROSS *Diomedea immutabilis*. One picked up along the Long Beach Freeway, Long Beach, LA, 13 Apr 1982 (113-1983). The record was published in *AB* 36:893.

The story of this bird first appeared in the newspaper *Long Beach Press Telegram* on 16 Apr after the bird was taken to a rehabilitation center, subsequently died, and was destroyed. Fortunately, photos (to CBRC) were taken while the bird was still alive.

Some Committee members felt that the bird could have come west through San Gorgonio Pass and then on toward the coast. There is some precedent for this supposition, as there is a previous record from this pass (Dunn and Unitt 1977) and several others from elsewhere in the Southwest, all in spring. Other members felt that the bird may have ridden a ship into Los Angeles Harbor and somehow made it to the nearby freeway. In support of this position members submitted to the record newspaper articles from the *San Francisco Examiner* (18 Mar 1983) and the *Oakland Tribune* (17 Mar 1983) that reported four birds that rode a container ship into the port of Oakland, ALA, on the east side of San Francisco Bay. Before clearing customs, the sailors attempted to evict the albatrosses. Three flew away, and presumably one of these was picked up a short time later in nearby Concord, CC. The fourth was taken to nearby Lake Merritt for rehabilitation. Thus, all records of this species near ports are suspect. This was the position taken by the Committee, which rejected the record (as natural occurrence questionable) 4-6 on the second circulation. A rumor circulated about a number of Laysan Albatrosses that had ridden a ship into Los Angeles Harbor, LA, in spring 1982, but we have no firm documentation of this. That all stranded albatrosses have been Laysans seems peculiar in view of the fact that Black-footed Albatross (*D. nigripes*) greatly predominates offshore, at least near the California coast. It may be that this species is more attracted to ships at night and becomes "trapped" on the deck, which may not have the space necessary for a running take-off.

This species is no longer on the Review List.

LITERATURE CITED

Ainley, D. G. and Manolis, B. 1979. Occurrence and distribution of the Mottled Petrel. W. Birds 10:113-123.

American Ornithologists' Union. 1957. Check-List of North American Birds, 5th ed. A.O.U., Baltimore, MD.

American Ornithologists' Union. 1983. Check-List of North American Birds, 6th ed. A.O.U., Washington, D.C.

American Ornithologists' Union. 1987. Thirty-sixth supplement to the A.O.U. Check-list of North American birds. Auk 104:591-596.

Baird, J. 1958. Yellow-throated Warblers in sycamores along the Delaware River in New Jersey. Urner Field Observer, Jan.

Banko, W. E. 1960. The Trumpeter Swan. Univ. of Nebraska Press, Lincoln.

Banks, R. C. 1985. American Black Duck from Korea. J. Field Ornithol. 56:277.

Bent, A. C. 1925. Life histories of North American wild fowl, part two. U.S. Natl. Mus. Bull. 130.

Binford, L. C. 1978. Lesser Black-backed Gull in California with notes on field identification. W. Birds 9:141-150.

Binford, L. C. 1983. Sixth report of the California Bird Records Committee. W. Birds 14:127-145.

Binford, L. C. 1985. Seventh report of the California Bird Records Committee. W. Birds 16:29-48

Binford, L. C. 1986. Check-list of California birds. W. Birds 17:1-16.

Birkhead, T. R, and Nettleship, D. N. 1985. Plumage variation in young Razorbills and murres. J. Field Ornithol. 56:246-250.

Brooks, A. 1924. Two new records for California. Condor 26:37.

California Bird Records Committee. 1987. Field list of California birds. Western Field Ornithologists, San Diego.

Cogswell, H. L. 1944. A new record of the Sharp-tailed Sparrow in California. Condor 46:204.

Craig, J. T. 1972. Two fall Yellow-throated Warblers in California. Calif. Birds 3:17-18.

Cramp, S., and Simmons, K. E. L. (eds.). 1977. The Birds of the Western Palearctic, Vol. I. Oxford, London.

DeSante, D. F., and Ainley, D.G. 1980. The avifauna of the South Farallon Islands, California. Studies Avian Biol. 4.

Dunn, J, and Unitt, P. 1977. A Laysan Albatross in interior southern California. W. Birds 8:27-28.

Garrett, K., and Dunn, J. 1981. Birds of Southern California. Los Angeles Audubon Society, Los Angeles.

Gibson, D. D. 1981. Migrant birds at Shemya Island, Aleutian Islands, Alaska. Condor 83:65-77.

Gillham, E., Harrison, J. M., and Harrison, J. G. 1966. A study of certain *Aythya* hybrids. Wildfowl Trust Annual Report 17:49-65.

Godfrey, W. E. 1986. The Birds of Canada, rev. ed. National Museums of Canada, Ottawa.

Grant, P. J., and Jonsson, L. 1984. Identification of stints and peeps. Br. Birds 77:293-314.

Grinnell, J. 1911. The Black Duck in California. Condor 13:138.

Grinnell, J., Bryant, H. C. and Storer, T. I. 1918. Game Birds of California. Univ. of Calif. Press, Berkeley.

Grinnell, J., and Miller, A. H. 1944. The distribution of the birds of California. Pac. Coast Avifauna 27.

Harris, S. W., and Gerstenberg, R. H. 1970. Common Teal and Tufted Duck in northwestern California. Condor 72:108.

Harrison, P. 1983. Seabirds: An Identification Guide. Houghton Mifflin, Boston.

Hoechlin, D. 1978. Yellow-crowned Night Heron in California. W. Birds 9:177-178.

Huey, L. M. 1931. *Icterus pustulatus*, a new bird to the A.O.U. Check-list. Auk 48:606-607.

Huey, L. M. 1936. Noteworthy records from San Diego, California. Condor 38:121.

Huey, L. M. 1961. Two unusual bird records for California. Auk 78:260.

Huey, L. M. 1962. Purple Gallinule strays to southern California. Auk 79:483.

Ingersoll, A. M. 1895. Wilson's Plover in California. Nidiologist 2:87.

Jehl, J. R., Jr. 1982. The biology and taxonomy of Townsend's Shearwater. Gerfaut 72:121-135.

Kessel, B., and Gibson, D. D. 1978. Status and distribution of Alaska birds. Studies Avian Biol. 1.

King, B., Finch D., Stallcup, R., and Russell, W. 1978. First North American sighting of Brown Shrike (*Lanius cristatus*) and Dusky Warbler (*Phylloscopus fuscatus*) and second record of Red-throated Flycatcher (*Ficedula parva*). Am. Birds 32:158-160.

Kinsky, F. C., and Fowler J. A.. 1973a. British-ringed Manx Shearwater in Australia. Br. Birds 55:86-87.

Kinsky, F. C., and Fowler J. A. 1973b. A Manx Shearwater (*Puffinus p. puffinus*) in New Zealand. Notornis 20:14-20.

Lincoln, F. C. 1923. The White Ibis in California. Condor 25:181.

Luther, J. S. 1980. Fourth report of the California Bird Records Committee. W. Birds 11:161-173.

Luther, J. S., McCaskie G., and Dunn, J. 1979. Third report of the California Bird Records Committee. W. Birds 10:169-187.

Luther, J. S., McCaskie, G., and Dunn, J. 1983. Fifth report of the California Bird Records Committee. W. Birds 14:1-16.

Manuwal, D. A., and Lewis, T. J. 1972. A Wheatear on Southeast Farallon Island, California. Auk 89:895.

McCaskie, R. G. 1964. Three southern herons in California. Condor 66:442-443.

McCaskie, R. G. 1966. The occurrence of Red-throated Pipits in California. Auk 83:135-136.

McCaskie, G. 1968. Noteworthy records of vireos in California. Condor 70:186.

McCaskie, G. 1970a. The occurrences of four species of Pelecaniformes in the southwestern United States. Calif. Birds 1:117-138.

McCaskie, G. 1970b. The Broad-billed Hummingbird in California. Calif. Birds 1:111-112.

McCaskie, G. 1970c. Occurrence of the eastern species of *Oporornis* and *Wilsonia in* California. Condor 72:373.

McCaskie, G. 1975. LeConte's Sparrow in California and the western United States. W. Birds 6:65-66.

McCaskie, R. G., and Banks, R. C. 1964. Occurrence and migration of certain birds in southwestern California. Auk 81:353-361.

McCaskie, R. G., and Banks, R. C. 1966. Supplemental list of birds of San Diego County, California. Trans. San Diego Soc. Nat. Hist. 14:157-168.

McCaskie, G., P., DeBenedictis, P., Erickson, R., and Morlan, J. 1979. Birds of Northern California: An Annotated Field List. Golden Gate Audubon Society, Berkeley.

McCaskie, G., Stallcup, R., and DeBenedictis, P. 1967a. The occurrence of certain flycatchers in California. Condor 69:85-86.

McCaskie, G., Stallcup, R., and DeBenedictis, P. 1967b. The distribution of certain Mimidae in California. Condor 69:310.

McCaskie, G., Stallcup, R., and DeBenedictis, P. 1967c. The status of certain fringillids in California. Condor 69:426-429.

McLean, D. D. 1937. Some additional records of birds for northeastern California. Condor 39:228-229.

McMurray, F. 1948. Brewster's Booby collected in the United States. Auk 65:309-310.

Medway, L. 1970. A ringing study of the migrating Brown Shrike in Malaysia. Ibis 112:184-198.

Miller, L. H. 1908. Louisiana Waterthrush in California. Condor 10:236-237.

Miller, L. H., and Miller, A. H. 1930. A record of the Scarlet Tanager for California. Condor 32:217.

Moffitt, J. 1940. Third record of the King Eider in California. Condor 42:305.

Morlan, J. 1985. Eighth report of the California Bird Records Committee. W. Birds 16:105-122.

Morlan, J., and Erickson, R. A. 1983. A Eurasian Skylark at Point Reyes, California,with notes on Skylark identification and systematics. W. Birds 14:113-126.

Morton, E. S., and Tate, J. L. 1963. The Trumpeter Swan in San Joaquin County, California. Condor 65:530.

Orr, R. T. 1950. A new North American record for the Tufted Duck. Condor 52:140.

Orr, R. T. 1962. The Tufted Duck in California. Auk 79:482-483.

Parkes, K. C. 1951. The genetics of the Golden-winged × Blue-winged Warbler complex. Wilson Bull. 63:5-15.

Philip, G. 1938. Scissor-tailed Flycatcher in southern California. Condor 40:40.

Pitman, R. L. 1986. Atlas of seabird distribution and relative abundance in eastern tropical Pacific. National Marine Fisheries Service, Southwest Fisheries Center, La Jolla, CA.

Pyle, P., Howell, S. N. G., Yunick, R. P., and DeSante, D. F. 1987. Identification Guide to North American Passerines. Slate Creek Press, Bolinas, CA.

Roberson, D. 1980. Rare Birds of the West Coast. Woodcock Publ., Pacific Grove, CA.

Roberson, D. 1985. Monterey Birds. Monterey Peninsula Audubon Society, Carmel, CA.

Roberson, D. 1986. Ninth report of the California Bird Records Committee. W. Birds 17:49-77.

Rogers, M. 1987. Report on rare birds in Great Britain in 1986. Br. Birds 80:516-571.

Svensson, L. 1984. Identification Guide to European Passerines, 3rd ed. Svensson, Stockholm, Sweden.

Swarth, H. S. 1915. The Scissor-tailed Flycatcher in California. Condor 17:203.

Talent, L. G. 1975. A Parakeet Auklet, *Cyclorrhynchus psittacula*, from Monterey Bay, California. Calif. Fish and Game 61:158.

Unitt, P. 1984. The birds of San Diego County. San Diego Soc. Nat. Hist. Memoir 13.

Veit, R. R., and Jonsson, L. 1984. Field identification of smaller sandpipers of genus *Calidris*. Am. Birds 38:853-875.

Williams, A., and Miller, G. M. 1963. The Trumpeter Swan in Marin County, California. Condor 65:69.

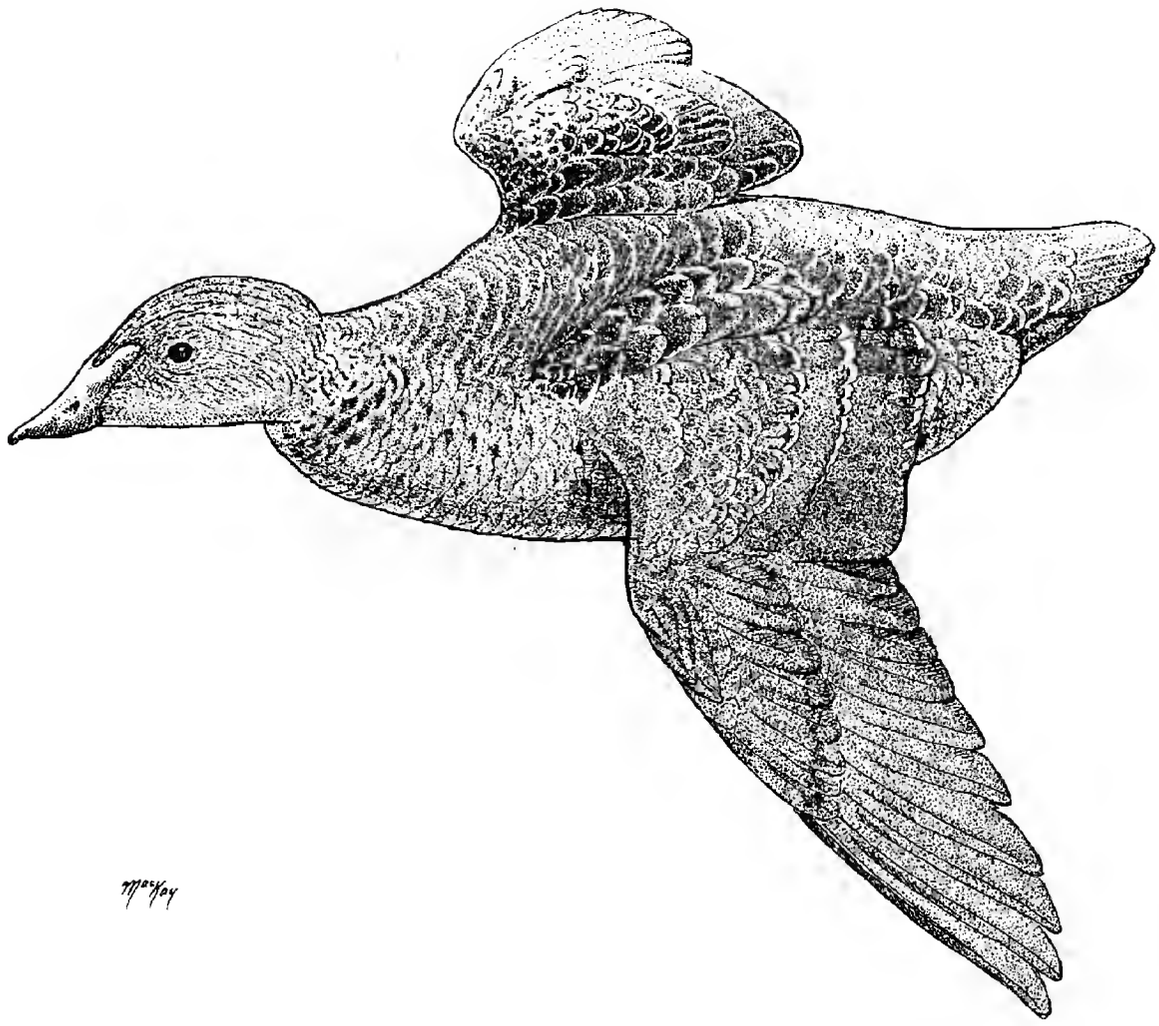
Williams, L., and Holmes, R. T. 1960. King Eider at Monterey, California. Condor 62:67-68.

Winter, J. 1973. The California Field Ornithologists' Records Committee report 1970-1972. W. Birds 4:101-106.

Yadon, V. L. 1970. Four Thick-billed Murre records for Monterey Bay. Calif. Birds 1:107-110.

Yocum, C. F., and Harris, S. W. 1975. Birds of Northwestern California. Humboldt State Univ., Arcata, CA.

Accepted 8 November 1988



Immature female King Eider

Sketch by Barry Kent MacKay

IDENTIFICATION OF THE SALTON SEA RUFOUS-NECKED SANDPIPER

RICHARD R. VEIT, Department of Ecology and Evolutionary Biology, University of California, Irvine, California 92717

On 17 August 1974, G. McCaskie, P. Unitt, J. L. Dunn, and J. Butler discovered and collected a small sandpiper near the mouth of the Alamo River at the south end of the Salton Sea, Imperial County (McCaskie 1975). They identified the bird as a Rufous-necked Sandpiper (*Calidris ruficollis*); the specimen is now number 38887 at the San Diego Natural History Museum. The specific identification of the bird as *C. ruficollis* was influenced by the distribution of previous records; *C. ruficollis* was known to breed in Alaska and had occurred as a vagrant in Ohio and California. The very similar Little Stint (*C. minuta*) had not at the time been recorded in North America. Since the latter species has now occurred several times in North America (A. O. U. 1983), and twice in California (juvenile, Bolinas Lagoon, Marin County, 14-22 September 1983, Roberson 1986; juvenile, Elkhorn Slough, Monterey County, 10-21 September 1985, Campbell et al. 1986, Dunn 1988), a reexamination of the Salton Sea specimen to ascertain whether it is *C. ruficollis* or *C. minuta* seems appropriate. The California Bird Records Committee has not yet published any opinion concerning this specimen; the information I present here may help the committee with its evaluation.

The Salton Sea specimen was in first alternate plumage when collected. In their first summer, *Calidris* sandpipers often grow a partial alternate plumage that is virtually indistinguishable from the basic plumage (Veit and Jonsson 1984, p. 858). A fully adult *Calidris* would not ordinarily *begin* primary molt until August at the earliest (Prater et al. 1977, Cramp and Simmons 1983), whereas this specimen had already replaced all but two of its primaries by 17 August. This replacement pattern is typical of one-year-old birds that summer south of the breeding range.

Prater et al. (1977) cited the ratio of wing length to tarsus length as a diagnostic difference between *C. ruficollis* and *C. minuta*. Unitt (in litt.) pointed out that the Salton Sea specimen should be identified as *minuta* on the basis of this criterion (Figure 1). On the specimen's left wing, the outer (juvenal) primaries have dropped and the new ones have not emerged, so that wing's measurement is meaningless. On the right wing, primaries one through eight have been replaced but numbers nine and ten, which are heavily worn, still remain. The wing chord on the right side measures 80.5 mm, and the specimen's tarsi average 18.4 mm, so the ratio of wing chord to tarsus length is 4.38. Prater et al. (1977) stated that ratios below 5.0 indicate *minuta* whereas ratios above 5.1 indicate *ruficollis*. The degree of wear on the specimen's juvenal primaries, however, casts doubt upon the usefulness of this criterion for classifying this specimen.

Other than the wing:tarsus ratio, there seems to be no single character that definitively separates these two species in basic or first alternate plumage (e.g., Veit and Jonsson 1984). The differences between the two species (overall gray vs. brown tone to upperparts, prominence of shaft streaks in scapulars,

wing coverts, and tertials, extent of white on forecrown) are subtle and subject to change through wear. Several ornithologists (G. McCaskie, J. R. Jehl Jr., J. L. Dunn, P. Unitt) having extensive experience with shorebirds have examined the Salton Sea specimen and are unable to assign it confidently to one species or another. Because of this ambiguity, I decided to use multivariate analysis to identify the specimen.

METHODS

To form a basis for comparison, I selected six specimens each of *C. ruficollis* and *C. minuta* from the collection at the Los Angeles County Museum of Natural History (LACM) (Table 1). On each specimen, I measured six characters: (1) tarsus length, (2) wing chord, (3) culmen length, (4) distance from front end of the nares to the bill tip, (5) bill depth at the front end of nares, and (6) bill width at the front end of the nares. I measured each character three times and used the mean of the three measurements in the statistical analysis. I used alternate-plumaged adults, so that the specific identity of each was unquestionable, and used all specimens of *minuta* and *ruficollis* in good condition available in the LACM collection. Because there are approximately equal numbers of males and females present in my selection of specimens, my statistical analyses should not be biased on the basis of sex. Since the specimen in question was at least 11 months old when collected, its bill and

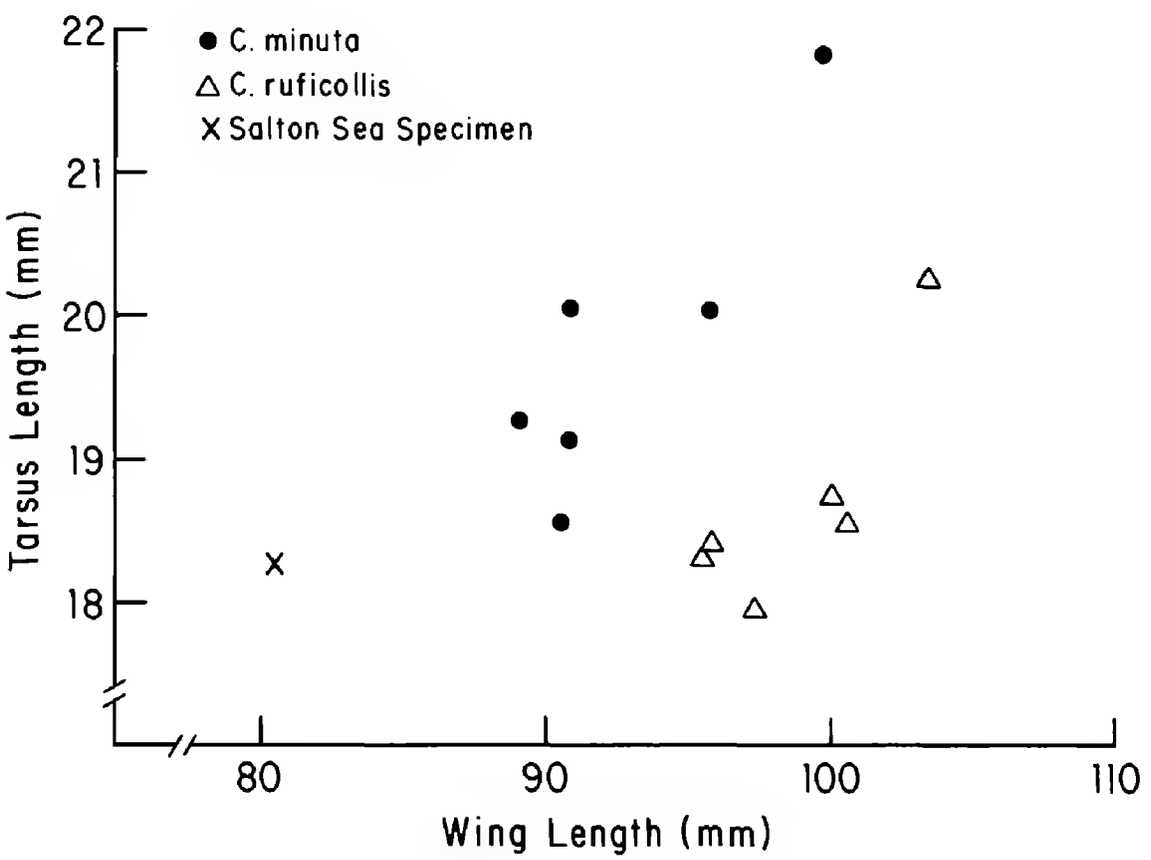


Figure 1. Wing length vs. tarsus length of twelve LACM specimens of the Rufous-necked Sandpiper and the Little Stint and of the Salton Sea specimen.

legs can be assumed to have achieved adult size. It is therefore appropriate to draw comparisons with adult, rather than juvenile, specimens.

I used SYSTAT (Wilkinson 1986), a software package developed for personal computers, to conduct the statistical analyses. Discriminant analysis is the most appropriate multivariate technique for assigning unknown specimens to the correct species (Sneath and Sokal 1973). I performed two discriminant analyses, one using all six variables, and a second with wing length excluded. The second analysis was necessary because the specimen in question is of indeterminate wing length owing to abrasion and feather loss.

In each analysis, the discriminant functions were calculated on the basis of the individuals of known species, and the unknown individual was subsequently assigned to species according to its discriminant score. The coefficients of the discriminant functions are based on standardized values of the original variables, so that SYSTAT gives equal weight to each variable. The null hypothesis, in this case that the two species are indistinguishable on the basis of the measurements taken, is accepted or rejected on the basis of the value of Wilks' lambda (W). W is related to the inverse of the eigenvalue of the discriminant functions by the formula

$$W = 1/(1 + L_i)$$

where L_i equals the eigenvalue associated with the ith function. (In this analysis, there is only one discriminant function because there are only two groups, i.e., species). Thus, values of W near zero indicate high discrimina-

Table 1 Measurements of *Calidris minuta*, *Calidris ruficollis*, and the Specimen from the Salton Sea

Sex	Tarsus	Wing Chord	Culmen	Bill from nares	Bill depth	Bill width
			Calidris minuta			
M	18.6	90.5	16.8	14.0	4.4	3.5
M	19.2	89.1	17.6	14.4	5.2	3.5
F	20.2	95.7	19.1	16.2	4.7	3.4
M	20.3	90.8	17.4	13.9	4.8	3.4
F	21.8	99.7	19.2	15.6	5.1	4.1
F	19.1	90.8	18.2	15.2	4.1	3.1
			Calidris ruficollis			
?	18.7	99.8	18.8	15.2	4.4	4.1
M	17.9	97.2	15.5	12.5	4.1	3.3
F	20.3	103.3	17.9	14.3	3.9	3.6
F	18.3	95.3	16.8	13.4	4.6	3.4
M	18.4	95.5	15.5	12.2	4.9	3.3
F	18.5	100.5	18.4	13.1	4.9	3.4
			SDNHM 38887			
M	18.3	80.5	15.6	12.7	4.3	3.3

tion and values near one indicate low discrimination. The statistical significance of W is computed by converting its value to an approximation of the F distribution (Klecka 1980).

RESULTS

In both analyses, all of the individuals of known species were correctly classified by the discriminant function. W was equal to 0.078 ($F = 14.243$, $p = 0.003$) with wing length included, and to 0.219 ($F = 4.984$, $p = 0.07$) with wing length excluded. Thus, these analyses indicate that wing length is the single most useful criterion for distinguishing between the two species. However, since the wings of the Salton Sea specimen are shorter than those of the shortest-winged *minuta* available in the LACM, its classification by this first analysis is uninterpretable. Therefore, I ran the analysis again without using wing length as a variable. The second analysis succesfully classifies all the LACM specimens, although with reduced confidence (Figure 2). In the second analysis, the variables most strongly influencing identification were bill length from nares, culmen length, bill depth, and tarsus length, decreasing in that order. Thus, the second analysis confirmed the field impressions of many observers—*C. ruficollis* has a shorter and stubbier bill than *C. minuta*.

DISCUSSION

Identification of the Salton Sea sandpiper based upon these discriminant analyses alone would be questionable. However, the results of the multivariate analyses *combined* with evaluation of the comparative importance of each mensural character yield, in my opinion, a firm conclusion. Figure 1 shows that the Salton Sea specimen's tarsus is shorter than that of any *minuta* measured at the LACM but within the range of *ruficollis*. Tarsus length is a character much less subject to variability than is wing length. Second, the classification of the Salton Sea specimen by the discriminant scores (Figure 2) makes sense because they are based mainly on bill structure, a distinguishing

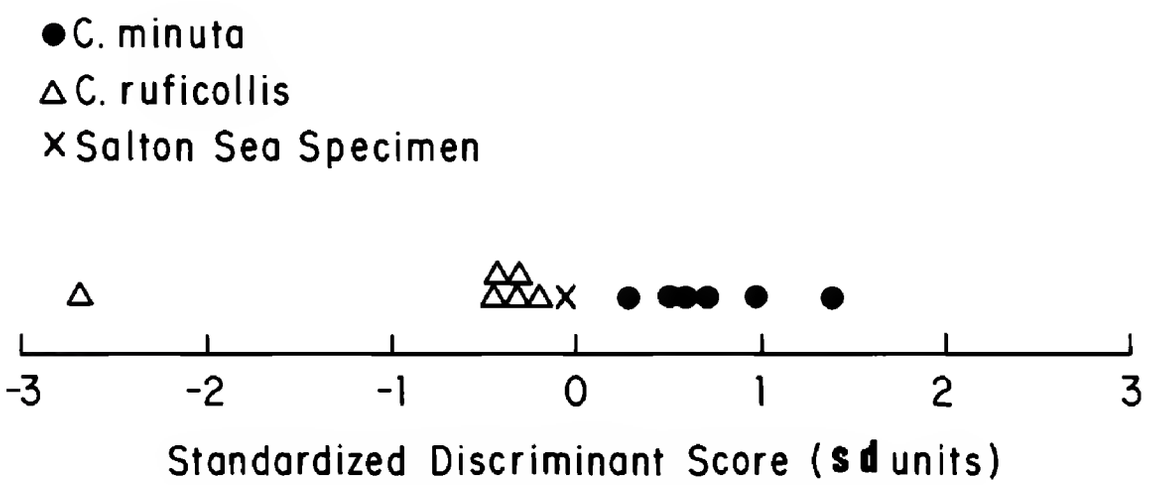


Figure 2. Discriminant scores of same specimens as in Figure 1. Units are standard deviations.

feature that has been cited by numerous authors (Wallace 1974, Jonsson and Grant 1984, Veit and Jonsson 1984). Thus, the Salton Sea specimen is a typical Rufous-necked Sandpiper that, when collected, had abnormally short wings because of abrasion.

ACKNOWLEDGMENTS

I thank Philip Unitt, Guy McCaskie, Jon L. Dunn, and Joseph Morlan for numerous helpful criticisms of the manuscript. Howard Tucker and Mark Andersen provided advice on the statistical analyses. Amadeo M. Rea (SDNHM) and Ralph W. Schreiber and Kimball L. Garrett (LACM) kindly provided access to the collections in their charge.

LITERATURE CITED

American Ornithologists' Union. 1983. Check-list of North American Birds. 6th ed. Am. Ornithol. Union, Lawrence, KS.

Campbell, K. F., Bailey, S. F., Barron, A. D., and Erickson, R. A. 1986. The autumn migration. Northern Pacific coast region. Am. Birds 40:329-333.

Cramp, S., and Simmons, K. E. L. (eds.). 1983. The Birds of the Western Palearctic. Vol. III. Oxford Univ. Press, Oxford.

Dunn, J. L. 1988. Tenth report of the California Bird Records Committee. W. Birds 19:129-163.

Jonsson, L., and Grant, P. J. 1984. Identification of stints and peeps. Br. Birds 77:293-315.

Klecka, W. R. 1980. Discriminant Analysis. Sage, Beverly Hills.

McCaskie, G. 1975. A Rufous-necked Sandpiper in southern California. W. Birds 6:111-113.

Prater, A. J., Marchant, J. H., and Vuorinen, J. 1977. Guide to the Identification and Ageing of Holarctic Waders. BTO Field Guide 17. Br. Trust Ornithol., Tring.

Roberson, D. 1986. Ninth report of the California Bird Records Committee. W. Birds 17:49-77.

Sneath, P. H. A., and Sokal, R. R. 1973. Numerical Taxonomy. Freeman, San Francisco.

Veit, R. R., and Jonsson, L. 1984. Field identification of smaller sandpipers within the genus *Calidris*. Am. Birds 38:853-876.

Wallace, D. I. M. 1974. Field identification of small sandpipers in the genus *Calidris*. Br. Birds 67:1-17.

Wilkinson, L. 1986. SYSTAT: The system for statistics. Order from SYSTAT Inc., 2902 Central St., Evanston, IL 60201.

Accepted 1 November 1988

NOTES

COMMUNAL WINTER ROOSTS OF FERRUGINOUS HAWKS IN SAN DIEGO COUNTY, CALIFORNIA

DAVID KING, 836 Stevens Ave., Solana Beach, California 92075
DONALD and MARJORIE HASTINGS, 2564 Bancroft, Spring Valley, California 92077

The behavior of the Ferruginous Hawk, *Buteo regalis*, has not been studied extensively during the non-nesting season. Ferruginous Hawks are less social than most other hawks of the genus *Buteo*. They are not known to flock in migration (Brown and Amadon, 1968, Eagles, Hawks and Falcons of the World, McGraw-Hill, New York) and are rarely found in groups in winter. In the only previous report of a communal winter roost of this species, Steenhof (1984, Wilson Bull. 96:137-138) described a South Dakota roost in cottonwoods, *Populus deltoides*, being used by one to six Ferruginous Hawks on 11 of 25 mornings during the winter of 1975-76. On nine of the mornings, the roost was shared with Bald Eagles, *Haliaeetus leucocephalus*. We here report two Ferruginous Hawk roost sites on the opposite edge of the species' normal winter range. In all our observations, the roosts were not shared with other species.

On 23 December 1985, while participating on the Lake Henshaw, California, Christmas Bird Count, Hastings and Hastings found nine Ferruginous Hawks roosting in two non-native, 20-meter-tall Pecan trees, *Carya illinoensis*, at the back edge of the golf course in the community of Warner Springs (33°17'N, 116°38'W). The hawks, which were found at first light, approximately 0615, were dispersed throughout the trees, with no bird apparently closer than three meters from another. After approximately 20 minutes, the birds began leaving the roost singly, flying directly away at an elevation of 15 to 30 meters. No more than three birds were seen in the air at any one time. All had left the roost by 0700, which was still before sunrise. After sunset, King, Hastings, and Hastings visited the roost site and found three Ferruginous Hawks in the trees.

No hawks were found using this roost on the Lake Henshaw Christmas Bird Count the following year on 3 January 1987. Before dawn on 21 December 1987, during the next year's count, Emily Durbin and Norma Sullivan found ten Ferruginous Hawks roosting in a cluster of seven Pecan trees and one Monterey Pine, *Pinus radiata* (also non-native), on the opposite side of the golf course. All these trees were approximately 15 meters tall. The behavior of these birds was similar to that described above, with all leaving singly before sunrise. After sunset that day, Alice DeBolt found 13 Ferruginous Hawks in the same trees.

On the next Lake Henshaw Christmas Bird Count on 20 December 1988, using lights, King and DeBolt flushed six Ferruginous Hawks from these trees in the predawn at 0500. That evening King and DeBolt found a second roost site on treeless rolling grassland 5.5 kilometers west of the original location (1.7 kilometers WNW of the Warner Springs Airport at 33°17'25", 116°42'W). Over a 15-minute period around dusk (1645), six Ferruginous Hawks flew in and landed on a series of 20-meter-tall telephone poles. After staying on a pole for a few minutes a bird would frequently shift to a new pole but none left the area. At times they were all on three adjacent poles (approximately 50 meters apart) with up to three birds sharing a 1.5-meter crosstree; at other times the birds were spread out on poles over a distance of 500 meters. Nightfall around 1715 ended observations of these birds. At 1730, King and DeBolt, again using lights, found six other Ferruginous Hawks at the golf course roost.

The majority of the Ferruginous Hawks found each winter in San Diego County occur within the Lake Henshaw Christmas Bird Count circle, in rolling grassy valleys at an elevation of around 900 meters. We note that in the three years when the birds were found roosting communally, the count reported high numbers of Ferruginous Hawks (33, 28, and 34, respectively). In the other six years, totals ranged from 4 to 25.

We thank Emily Durbin, Norma Sullivan, Alice DeBolt, and Claude Edwards for their help in supplying information, and Stephen Gustafson for his helpful review of this note. We also thank the Warner Springs Resort and the Vista Irrigation District for yearly permission to bird on their property.

Accepted 15 January 1989

Immature Ferruginous Hawk near Standish, Lassen County, California

Photo by Tim Manolis

Is It Western Or Is It Yellow Bellied?

SEE the Difference with Bausch & Lomb.

Serious birding demands the ability to determine the often subtle differences in bird features, even at close distance. To accomplish this, quality optics are essential. Bausch & Lomb binoculars offer the finest optical systems available. Choose from over twenty models including the Custom™ line designed with leading naturalists and endorsed by the National Audubon Society, or the new Legacy models, ergonomically styled to meet today's lifestyle.

The Bausch & Lomb binocular family starts with the world famous *"Elite"* model available in 8x42 or 10x42. The *Elite* has set the standard by which all other binoculars will be measured. They are built to the most exacting tolerances demanded by serious birders, fully multi-coated lenses featuring close focus (to twelve feet), and long eye relief. Every Bausch & Lomb binocular represents over 130 years of optical excellence and state of the art design.

BAUSCH & LOMB

When it comes to vision enhancement the world thinks of Bausch & Lomb.

A MASKED BOOBY AT ISLAS LOS CORONADOS, BAJA CALIFORNIA, MEXICO

WILLIAM T. EVERETT, Department of Birds and Mammals, San Diego Natural History Museum, P. O. Box 1390, San Diego, California 92112

SHERRY TERESA, California Department of Fish and Game, California Research Station, 2140 Eastman Avenue, Suite 100, Ventura, California 93003

On 23 April 1988 we observed a juvenile Masked Booby (*Sula dactylatra*) roosting on a small rock off the north end of Isla Coronado Sur, Baja California, Mexico. Islas Los Coronados are situated 6 nautical miles (nm) off the west coast of northern Baja California and 4 nm south of the United States/Mexico boundary.

We first noticed the bird at 1250 as we cruised around the north end of the island. We slowly approached and observed it for 25 minutes at distances as close as 6 meters (photographs on file at the San Diego Natural History Museum). Throughout our observation the bird seemed oblivious to our presence, despite several attempts to flush it by sounding our air horn. It remained in the same spot, at times tucking its bill under its wing. Using 10 × 50 and 10 × 40 binoculars, we had excellent views of both front and back.

The bird was immediately identifiable as a sulid by the shape of its bill and head and its overall size. A Western Gull (*Larus occidentalis*) and Double-crested Cormorant (*Phalacrocorax auritus*) were on the same rock, allowing close comparison. The dorsal surface, including the wings, back, rump, and tail were a uniform light brown, approximating the Army Brown (Color 219B) of Smithe (1975). The head, neck, chin, and upper throat were a darker shade of brown, close to Dark Grayish Brown (Color 20). This contrasted sharply at the nape with the color of the back. There was no white flecking in the plumage of the head, whitish feather tips on the mantle, or white on the rump or back of the neck, which would suggest an immature Blue-footed Booby (*S. nebouxii*). The underparts, including the vent, abdomen, breast, and sides were an immaculate white. This pure white extended up to the throat, where it met the dark brown of the head and chin in a sharply contrasting shallow inverted V. According to Nelson (1978), this pattern on the throat is diagnostic of juvenile *S. dactylatra*. In all plumages, Brown Boobies (*S. leucogaster*) show brownish coloration extending down to the central breast. The legs, feet, bill, and facial skin were a dingy, nondescript grayish color. When flying, juvenile Masked Boobies are often recognized by a whitish collar around the hindneck. This characteristic was not noted on the bird at Los Coronados, perhaps because the neck was drawn close to the body throughout our observation. According to Nelson (1978), juvenile plumage is retained until the bird is at least seven months old. By the age of nine months the feathers of the head are mostly white, and white flecking is apparent over most of the mantle.

Masked Boobies, along with Red-footed Boobies (*S. sula*), are the most pelagic of the four sulid species occurring in the tropical and subtropical eastern Pacific Ocean (Pitman 1986). They breed off southern Baja California at San Benedicto Island (Jehl and Parkes 1982), Clarion Island (Everett 1988), and Alijos Rocks (Pitman 1985). North of Alijos Rocks they are extremely rare. They are unrecorded from Isla Guadalupe (Jehl and Everett 1985) and not previously known from Islas Los Coronados (Jehl 1977). Off Alta California there is one record of an adult observed on 10 January 1977 at Cortes Banks, 35 km southwest of the south end of San Clemente Island (Lewis and Tyler 1978). Details of a sighting of an adult *S. dactylatra* on 14 November 1987 at San Elijo Lagoon in San Diego County (L. Santaella, pers. comm., McCaskie 1988) have been sent to but have not yet been evaluated by the California Bird Records Committee.

We thank J. B. Nelson for confirming the identification of the bird and reviewing the manuscript, and Victor and Josephine Alleman for providing transportation to Islas Los Coronados and other southern California islands aboard their yacht the *Ballena*.

LITERATURE CITED

Everett, W. T. 1988. Notes from Clarion Island. Condor 90:512-513.

Jehl, J. R., Jr., and Parkes, K. C. 1982. The status of the avifauna of the Revillagigedo Islands, Mexico. Wilson Bull. 94:1-19.

Jehl, J. R., Jr., and Everett, W. T. 1985. History and status of the avifauna of Isla Guadalupe, Mexico. Trans. San Diego Soc. Nat. Hist. 20:313-336.

Lewis, D. B., and Tyler, W. B. 1978. First record of the Blue-faced Booby from the Pacific Coast of the United States. W. Birds 9:175-176.

McCaskie, G. 1988. The autumn migration. Southern Pacific coast region. Am. Birds 42:134-139.

Nelson, J. B. 1978. The Sulidae. Aberdeen Univ. Stud. Ser. 154. Oxford Press, London.

Pitman, R. L. 1985. The marine birds of Alijos Rocks, Mexico. W. Birds 16:81-92.

Pitman, R. L. 1986. Atlas of seabird distribution and relative abundance in the eastern tropical Pacific. Admin. Rep. LJ-86-02C. Southwest Fisheries Center, P. O. Box 271, La Jolla, CA 92038.

Smithe, F. B. 1975. Naturalist's Color Guide. Am. Mus. Nat. Hist., New York.

Accepted 28 November 1988

Adult Masked Booby, Isla Clarión, Mexico

Photo by William T Everett

Wing Your Way to . . .

Sabine's Gull *Photo by Bruce Webb*

Western Field Ornithologists/ Western Bird Banding Association Joint Annual Meeting October 13, 14, and 15, 1989 University of Nevada, Reno

WESTERN BIRDS, INDEX, VOLUME 19, 1988

Compiled by Mildred Comar

Accipiter cooperii, 8, 21
striatus, 9, 21
Actitis macularia, 71, 72, 73
Aegolius funereus, 158
Agelaius pheoniceus, 9, 23
Aimophila cassinii, 154
ruficeps, 8, 13, 22
Alauda arvensis, 149
Albatross, Laysan, 134, 159
Ammodramus caudacutus, 130, 154
leconteii, 154
savannarum, 9
Amphispiza belli, 8
bilineata, 10
Anas querquedula, 139
rubripes, 130, 138
Anthus cervinus, 150
spinoletta, 9
spragueii, 150
Aphelocoma coerulescens, 8, 12, 13, 22
Ardea herodias, 37-40
Arenaria interpres, 71, 73
Asio otus, 8
Auklet, Cassin's, 91
Parakeet, 147
Avocet, American, 71, 72, 73
Aythya fuligula, 139, 157

Banks, Richard C., Supposed northern records of the Southern Fulmar, 121-124
Bartramia longicauda, 142, 157
Blackbird, Brewer's, 9, 23
Red-winged, 9, 23
Yellow-headed, 9
Bluebird, Western, 8, 22
Bombycilla cedrorum, 9, 22
Booby, Brown, 136
Masked, 173-174
Brown, Bryan T., Breeding ecology of a Willow Flycatcher population in Grand Canyon, Arizona, 25-33
Canyon, Arizona, 25-33
Brown, Patti Powers and Stanley W. Harris, Foods found in 103 Red-necked Phalaropes, 79-80
Buchanan, Joseph B., Abundance and migration of shorebirds at two Puget Sound estuaries, 69-78
Bunting, Lazuli, 9, 12, 15, 16, 18, 19
Painted, 154
Snow, 155
Bushtit, 8, 13, 22
Buteo albonotatus, 140
regalis, 170-171

Calidris acuminata, 155
alpina, 72, 73, 74, 75, 76, 77
ferruginea, 144
fuscicollis, 143
mauri, 71, 72, 73, 74, 75, 76
minuta, 141, 143, 165, 166, 167
minutilla, 72, 73, 74, 80
ruficollis, 165-169
Callipepla californica, 8, 12, 21
Calonectris leucomelas, 155
Calypte anna, 8, 21
Cardinal, Northern, 130
Cardinalis cardinalis, 130
sinuatus, 154
Carey, Christopher G., *see* Ivey, G
Carduelis lawrencei, 9, 18, 23
pinus, 9
psaltria, 9, 15, 17, 18, 19, 23
tristis, 9, 15, 17, 18, 23
Carpodacus mexicanus, 9, 12, 13, 23
purpureus, 9, 15, 17, 18, 23
Catbird, Gray, 150
Catharus fuscescens, 150
guttatus, 8, 14, 16, 18, 19, 22
minumus, 150
ustulatus, 9, 12, 14, 16, 18, 19, 22
Catherpes mexicanus, 10, 22
Certhia americana, 8, 13, 22
Chamaea fasciata, 8, 22
Charadrius alexandrinus, 35
semipalmatus, 35-36, 70, 72, 73
vociferus, 10, 21, 70, 72, 73
wilsonia, 142
Chat, Yellow-breasted, 9, 22
Chen canagica, 138
Chickadee, Chestnut-backed, 8, 12, 13, 22
Chondestes grammacus, 8, 10, 12, 13, 22
Clark, Clarence F., Observations on the nesting success of Bell's Vireos in southern Arizona, 117-120
Colaptes auratus, 8, 14, 16, 18, 21
Condor, California, 130
Contopus borealis, 9, 21
pertinax, 148
sordidulus, 9, 13
Contreras, Alan, Northern Waterthrush summer range in Oregon, 41-42
Cormorant, Olivaceous, 136

Coturnicops noveboracensis, 129, 149
Cowbird, Brown-headed, 9, 25, 26, 31, 32, 117, 118, 119
Creeper, Brown, 8, 13, 22
Cyanocitta cristata, 150
stelleri, 8, 12, 13, 22, 51, 58, 59
Cyclorrhynchus psittacula, 147
Cygnus buccinator, 137, 157
Cynanthus latirostris, 148, 158

Dendrocygna autumnalis, 157
Dendroica cerulea, 153
coronata, 8, 9, 14, 16, 18, 22
dominica, 152
fusca, 10
graciae, 152
nigrescens, 9, 14, 16, 18, 22
occidentalis, 10, 14, 18, 22
petechia, 9, 12, 14, 16, 18, 22
pinus, 153
townsendi, 9, 12, 14, 16, 18, 19, 22
Diomedea immutabilis, 134, 159
Dove, Mourning, 8, 21
Dowitcher, Short-billed, 72, 73, 75
Long-billed, 73, 75
Duck, American Black, 130, 138
Tufted, 139, 157
Dumetella carolinensis, 150
Dunlin, 72, 73, 74, 75, 76, 77
Dunn, Jon L., Tenth report of the California Bird Records Committee, 129-163

Egret, Reddish, 136
Egretta rufescens, 136
Eider, King, 139
Empidonax difficilis, 1, 12, 14, 16, 18, 22, 49-60
hammondii, 1, 21, 49-60
traillii, 10, 14, 16, 18, 21, 25-33, 34
wrightii, 10, 21
Eremophila alpestris, 8, 12, 22
Eudocimus albus, 137
Euphagus cyanocephalus, 9, 23
Everett, William T., Biology of the Black-vented Shearwater, 89-104; Book review, 83-85.
Everett, William T. and Sherry Teresa, Masked Booby at Islas Los Coronados, Baja California, Mexico, 173-174

Falco sparverius, 8
Finch, House, 9, 12, 13, 23
Purple, 9, 15, 17, 18, 23
Flicker, Northern, 8, 14, 16, 18, 21
Flycatcher, Ash-throated, 9, 22
Dusky-capped, 149
Gray, 10, 21
Great Crested, 145, 149
Hammond's, 1, 21, 49-60
Olive-sided, 9, 21
Scissor-tailed, 147, 149
Western, 1, 12, 14, 16, 18, 22, 49-60
Willow, 10, 14, 16, 18, 21, 25-33, 34
Fothergill, Kent A., see Ivey, G.
Fulmar, Southern, 121-124
Fulmarus glacialoides, 121-124

Gallinago gallinago, 72, 73, 76
Gallinule, Purple, 142
Garganey, 139
Gavia adamsii, 134, 155
Geothlypis trichas, 8
Godwit, Bar-tailed, 143
Hudsonian, 142
Goldfinch, American, 9, 15, 17, 18, 23
Lawrence's, 9, 28, 23
Lesser, 9, 15, 17, 18, 19, 23
Goose, Emperor, 138
Grackle, Common, 155, 158
Grosbeak, Black-headed, 9, 12, 14, 16, 18, 19, 22
Grouse, Sharp-tailed, 130
Gubanich, Alan A. and Hugh Judd, First report of nesting Ring-billed Gulls in Nevada, 125-127
Gull, California, 82, 125
Common Black-headed, 146
Glaucous-winged, 82
Heermann's, 62
Lesser Black-backed, 144, 146
Little, 146, 158
Ring-billed, 125-127
Sabine's, 82
Thayer's, 82
Yellow-footed, 82
Gymnogyps californianus, 130

Harris, Stanley W., see Brown, P.
Hastings, Donald and Marjorie, see King, D.
Hawk, Cooper's, 8, 21
Ferruginous, 170-171
Harris', 130, 140
Sharp-shinned, 9, 21
Zone-tailed, 140
Helmitheros vermivorus, 153
Heron, Great Blue, 37-40
Hummingbird, Allen's, 9, 21

Anna's, 8, 21
Broad-billed, 148, 158
Calliope, 10, 14, 18
Rufous, 10, 14, 18, 21

Ibis, White, 137
White-faced, 105-108
Icteria virens, 9, 22
Icterus galbula, 9, 15, 17, 18, 23
pustulatus, 155
Ictinia mississippiensis, 139
Ivey, Gary L., Kent A. Fothergill, and Karlyn L. Yates-Mills, Semipalmated Plover nest in Oregon, 35-36
Ivey, Gary L., Mark A. Stern and Christopher G. Carey, Increasing White-faced Ibis population in Oregon, 105-108
Ixoreus naevius, 9

Jay, Blue, 150
Scrub, 8, 12, 13, 22
Steller's, 8, 12, 13, 22, 51, 58, 59
Judd, Hugh, see Gubanich, A.
Junco, Dark-eyed, 1, 10, 12, 13, 23
Junco hyemalis. 1, 10, 12, 13, 23

Kaiser, Susan, see Mewaldt, L. R.
Kestrel, American, 8
Killdeer, 10, 21, 70, 72, 73
King, David and Donald and Marjorie Hastings, Communal winter roosts of Ferruginous Hawks in San Diego County, California, 170-171
Kingbird, Thick-billed, 145, 149
Western, 9, 22
Kinglet, Golden-crowned, 8
Ruby-crowned, 9, 14, 16, 18, 22
Kite, Mississippi, 139

Lanius cristatus, 130, 148, 151
ludovicianus, 8, 22
Lark, Horned, 8, 12, 22
Larus californicus, 82, 125
delawarensis, 125-127
fuscus, 144, 146
glaucescens, 82
heermanni, 62
minutus, 146
ridibundus, 146
thayeri, 82
Limosa haemastica, 142
lapponica, 143
Limnodromus griseus, 72, 73, 75
scolopaceus, 73, 75

Loon, Yellow-billed, 134, 155

Magpie, Yellow-billed, 8, 22
Meadowlark, Western, 9, 23
Melanerpes formicivorus, 8
Melospiza lincolnii, 9, 15, 17, 18, 23
melodia, 9, 23
Mewaldt, L. Richard and Susan Kaiser, Passerine migration along the inner Coast Range of central California, 1-23
Micropalama himantopus, 72, 75
Mimus polyglottos, 8, 14, 16, 18, 22
Mockingbird, Northern, 8, 14, 16, 18, 22
Molothrus ater, 9, 25, 26, 31, 32, 117, 118, 119
Morlan, Joseph, see Stallcup, R.; see Trochet, J.
Murphy, Marty, Status of Great Blue Heron colonies in King County, Washington, 37-40
Murre, Thick-billed, 147
Myiarchus cinerascens, 9, 22
crinitus, 145, 149
Myioborus pictus, 153

Night-Heron, Yellow-crowned, 137
Numenius phaeopus, 71, 72
Nuthatch, Red-breasted, 8, 22
White-breasted, 8, 22
Nycticorax violaceus, 137

Oceanites oceanicus, 136
Oenanthe oenanthe, 150
Oporornis agilis, 153, 158
formosus, 153
philadelphia, 153
tolmiei, 9, 12, 14, 16, 18, 22
Oriole, Northern, 9, 15, 17, 18, 23
Streak-backed, 155
Otus kennicottii, 8, 21
Owl, Barred, 148
Boreal, 158
Long-eared, 8

Parabuteo unicinctus, 130, 140
Parus inornatus, 8, 13, 22
rufescens, 8, 12, 13, 22
Passerculus sandwichesnsis, 9, 15, 16, 18, 23
Passerella iliaca, 9, 12, 15, 16, 18, 23
Passerina amoena, 9, 12, 15, 16, 18, 19
ciris, 154
Petrel, Cook's, 134, 135
Mottled, 134

Pewee, Greater, 148
Phaethon rubricauda, 136
Phainopepla, 8
Phainopepla nitens, 8
Phalacrocorax olivaceus, 136
Phalarope, Red, 72, 76
Red-necked, 72, 73, 76, 79-80
Wilson's, 80
Phalaropus fulicaria, 72, 76
lobatus, 72, 73, 76
tricolor, 80
Pheucticus melanocephalus, 9, 12, 14, 16, 18, 19, 22
Phoebe, Black, 8, 22
Say's, 10, 22
Pica nuttalli, 8, 22
Picoides arcticus, 110, 113
nuttallii, 8, 21
pubescens, 8
tridactylus, 109-115
villosus, 8, 109, 110, 113, 114
Pipilo chlorurus, 10
erythrophthalmus, 8, 12, 13, 22
fuscus, 8, 12, 13, 22
Pipit, Red-throated, 150
Sprague's, 150
Water, 9
Piranga ludoviciana, 9, 12, 14, 16, 18, 22
olivacea, 154
Plectrophenax nivalis, 155
Plegadis chihi, 105-108
Plover, Black-bellied, 69, 72, 73, 74, 76, 77
Lesser Golden, 80
Semipalmated, 35-36, 70, 72, 73
Snowy, 35
Wilson's, 142
Pluvialis dominica, 80
squatarola, 69, 72, 73, 74, 76, 77
Porphyrula martinica, 142
Protonotaria citrea, 153, 158
Psaltriparus minimus, 8, 13, 22
Pterodroma cookii, 134, 135
inexpectata, 134
Ptychoramphus aleuticus, 91
Puffinus auricularis, 92, 94, 96
creatopus, 62, 66
gavia, 100
griseus, 66
nativitatis, 66, 97
opisthomelas, 89-104, 156
pacificus, 61-68, 96
puffinus, 89, 94, 97, 156
tenuirostris, 66, 97
Pyrrhuloxia, 154

Quail, California, 8, 12, 21
Quiscalus quiscula, 155, 158

Rail, Yellow, 129, 140
Recurvirostra americana, 71, 72, 73
Redshank, Spotted, 142
Redstart, American, 10
Painted, 153
Regulus calendula, 9, 14, 16, 18, 22
satrapa, 8
Roberson, Don, see Stallcup, R.; see Trochet, J.
Robin, American, 8, 22

Sakai, Howard F., Breeding biology and behavior of Hammond's and Western Flycatchers in northwestern California, 49-60
Salpinctes obsoletus, 8
Sandpiper, Buff-breasted, 144, 146
Curlew, 144
Least, 72, 73, 74, 80
Rufous-necked, 165-169
Sharp-tailed, 155
Spotted, 71, 72, 73
Stilt, 72, 75
Upland, 142, 157
Western, 71, 72, 73, 74, 75, 76
White-rumped, 143
Wood, 157
Sapsucker, Red-breasted, 9
Sayornis nigricans, 8, 22
saya, 10, 22
Screech-Owl, Western, 8, 21
Seiurus motacilla, 153
noveboracensis, 41-42
Selasphorus rufus, 10, 14, 18, 21
sasin, 9, 21
Setophaga ruticilla, 10
Shearwater, Black-vented, 89-104, 156
Buller's, 62, 66
Christmas, 66, 97
Greater, 100
Manx, 89, 94, 97, 156
Pink-footed, 62, 66
Short-tailed, 66, 97
Sooty, 66
Streaked, 155
Townsend's, 92, 94, 96
Wedge-tailed, 61-68, 96
Shrike, Brown, 130, 148, 151
Loggerhead, 8, 22
Sialia mexicana, 8, 22

Siskin, Pine, 9
Sitta canadensis, 8, 22
carolinensis, 8, 22
Skylark, Eurasian, 149
Snipe, Common, 72, 73, 76
Somateria spectabilis, 139
Sparrow, Black-chinned, 9
Black-throated, 10
Cassin's, 154
Chipping, 9, 15, 16, 18, 19, 22
Fox, 9, 12, 15, 16, 18, 23
Golden-crowned, 10, 12, 15, 17, 18, 23
Grasshopper, 9
Lark, 8, 10, 12, 13, 22
Le Conte's, 154
Lincoln's, 9, 15, 17, 18, 23
Rufous-crowned, 8, 13, 22
Sage, 8
Savannah, 9, 15, 16, 18, 23
Sharp-tailed, 130, 154
Song, 9, 23
White-crowned, 2, 10, 12, 15, 17, 18, 19, 23
White-throated, 10
Sphyrapicus ruber, 9
Spizella atrogularis, 9
passerina, 9, 15, 16, 18, 19, 22
Stallcup, Richard, Joseph Morlan, and Don Roberson, First record of the Wedge-tailed Shearwater in California, 61-68
Starling, European, 8, 22
Stellula calliope, 10, 14, 18
Stern, Mark, A., see Ivey, G.
Stint, Little, 141, 143, 165, 166, 167
Storm-Petrel, Wilson's, 136
Strix varia, 148
Sturnella neglecta, 9, 23
Sturnus vulgaris, 8, 22
Sula dactylatra, 173-174
leucogaster, 136
Swallow, Violet-green, 9
Swan, Trumpeter, 137, 157

Tachycineta thalassina, 9
Tanager, Scarlet, 154
Western, 9, 12, 14, 16, 18, 22
Teresa, Sherry, see Everett, W.
Thrasher, California, 8, 22
Thrush, Gray-cheeked, 150
Hermit, 8, 14, 16, 18, 19, 22
Swainson's, 9, 12, 14, 16, 18, 19, 22
Varied, 9
Thryomanes bewickii, 8, 13, 22
Titmouse, Plain, 8, 13, 22
Tove, Michael and Charles H. Trost, First record of the Western Gull from Idaho, 81-82
Towhee, Brown, 8, 12, 13, 22
Green-tailed, 10
Rufous-sided, 8, 12, 13, 22
Toxostoma redivivum, 8, 22
Tringa erythropus, 142
flavipes, 71, 72, 73
glareola, 157
melanoleuca, 71, 72, 73, 74, 76
Trochet, John, Joseph Morlan, and Don Roberson, First record of the Three-toed Woodpecker in California, 109-115
Troglodytes aedon, 9, 22
troglodytes, 8
Tropicbird, Red-tailed, 136
Trost, Charles H., see Tove, Michael
Tryngites subruficollis, 144, 146
Turdus migratorius, 8, 22
Turnstone, Ruddy, 71, 73
Tympanuchus phasianellus, 130
Tyrannus crassirostris, 145, 149
forficatus, 147, 149
verticalis, 9, 22

Uria lomvia, 147

Veery, 150
Veit, Richard R., Identification of the Salton Sea Rufous-necked Sandpiper, 165-169
Vermivora celata, 8, 12, 14, 16, 18, 19, 22
chrysoptera, 152
peregrina, 10, 22
pinus, 151, 152
ruficapilla, 10, 14, 16, 18, 22
Vireo, Bell's, 10, 117-120
Hutton's, 8, 13
Philadelphia, 151, 158
Solitary, 9, 22
Warbling, 9, 12, 14, 16, 18, 19, 22
White-eyed, 151
Yellow-throated, 151
Vireo bellii, 10, 117-120
flavifrons, 151
gilvus, 9, 12, 14, 16, 18, 19, 22
griseus, 151
huttoni, 8, 13
philadelphicus, 151, 158
solitarius, 9, 22

Warbler, Black-throated Gray, 9, 14, 16, 18, 22
Blackburnian, 10
Blue-winged, 151
Cerulean, 153
Connecticut, 153, 158
Golden-winged, 152
Grace's, 152
Hermit, 10, 14, 16, 18, 22
Kentucky, 153
MacGillivray's, 9, 12, 14, 16, 18, 22
Mourning, 153
Nashville, 10, 14, 16, 18, 22
Orange-crowned, 8, 12, 14, 16, 18, 19, 22
Pine, 153
Prothonotary, 153, 158
Tennessee, 10, 22
Townsend's, 9, 12, 14, 16, 18, 19, 22
Wilson's, 9, 12, 14, 16, 18, 19, 22
Worm-eating, 153
Yellow, 9, 12, 14, 16, 18, 22
Yellow-rumped, 8, 9, 14, 16, 18, 22
Yellow-throated, 152
Waterthrush, Louisiana, 153
Northern, 41-42
Wood-Pewee, Western, 9, 13
Waxwing, Cedar, 9, 22
Webster, Richard, Book review, 43-44
Wheatear, Northern, 150
Whimbrel, 71, 72
Whistling-Duck, Black-bellied, 157
Wilsonia pusilla, 9, 12, 14, 16, 18, 19, 22
Woodpecker, Acorn, 8
Black-backed, 110, 113
Downy, 8
Hairy, 8, 109, 110, 113, 114
Nuttall's, 8, 21
Three-toed, 109-115
Wren, Bewick's, 8, 13, 22
Canyon, 10, 22
House, 9, 22
Rock, 8
Winter, 8
Wrentit, 8, 22

Xanthocephalus xanthocephalus, 9
Xema sabini, 82

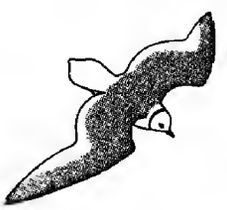
Yates-Mills, Karlyn L., see Ivey, G.
Yellowlegs, Greater, 71, 72, 73, 74, 76
Lesser, 71, 72, 73
Yellowthroat, Common, 8

Zenaida macroura, 8, 21
Zonotrichia albicollis, 10
atricapilla, 10, 12, 15, 17, 18, 23
leucophrys, 2, 10, 12, 15, 17, 18, 19, 23

COLLECTORS' ITEMS

T-shirts from recent WFO conventions are available in limited quantities. All portray special designs by Narca Moore-Craig and include Sabine's Gull and Yucca, Palm Springs, CA, 1985, Sabine's Gull and Orca, Bellingham, WA, 1987, and Sabine's Gull and storm-petrels, Monterey, CA, 1988. All are $9.00 each (plus $1.50 postage and handling) in men's and women's sizes S, M, L, and XL. For orders or inquiries write Ginger Johnson, 4637 Del Mar Ave., San Diego, CA 92107.

DUTCH BIRDING

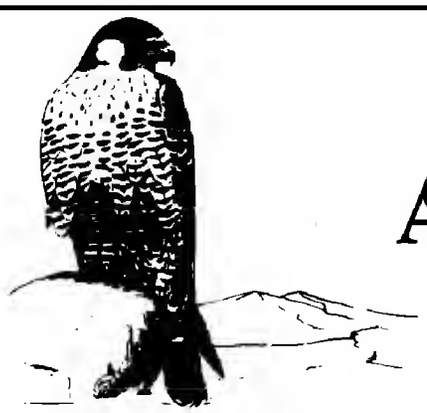


Quarterly journal for every keen birder!

- ☐ Excellent papers on identification, distribution, movements and behaviour of Palearctic birds.
- ☐ Latest news on rare birds in the Netherlands and Belgium.
- ☐ In English or with English summaries.
- ☐ Well produced with numerous high quality photographs.

For information write to:
Dutch Birding, Postbus 5611,
1007 AP Amsterdam,
Netherlands.

Subscribers to *Dutch Birding* can claim 25% off a *British Birds* subscription



Available Now!

Peregrine Falcon Populations:
Their Management and Recovery
Edited by Tom J. Cade, James H. Enderson, Carl G. Thelander and Clayton M. White

The proceedings of the 20th Anniversary International Conference on this endangered species are now available in a 949-page hardbound book. Over 125 contributing authors discuss in 81 chapters the Peregrine's worldwide status, DDT/chemical problems, migration and banding studies, captive propagation and reintroduction efforts, population dynamics, systematics, and human interactions. Includes a forward by Roger Tory Peterson, a full-color plate by Hans Peeters, and 68 b/w photos. (ISBN 0-9619839-0-6)

$45.00 + $3.75 shipping per copy in the United States
Foreign shipping per copy, $5.00 surface, $20.00 airmail
(US funds only: Idaho residents add 5% sales tax)
The Peregrine Fund, Inc., World Center for Birds of Prey
5666 W. Flying Hawk Lane
Boise, ID 83709
(208) 362-3717

Volume 19, Number 4, 1988

Tenth Report of the California Bird Records Committee
Jon L. Dunn 129

Identification of the Salton Sea Rufous-necked Sandpiper
Richard R. Veit 165

NOTES

Communal Winter Roosts of Ferruginous Hawks in San Diego County, California *David King and Donald and Marjorie Hastings* 170

A Masked Booby at Islas Los Coronados, Baja California, Mexico
William T. Everett and Sherry Teresa 173

INDEX *Mildred Comar* 177

Cover photo by © Steve Bouricius, of Peaceful Valley, Colorado: White-tailed Ptarmigan (*Lagopus leucurus*), Lefthand Reservoir, Colorado, March 1983.

Western Birds solicits papers that are both useful to and understandable by amateur field ornithologists and also contribute significantly to scientific literature. The journal welcomes contributions from both professionals and amateurs. Appropriate topics include distribution, migration, status, identification, geographic variation, conservation, behavior, ecology, population dynamics, habitat requirements, the effects of pollution, and techniques for censusing, sound recording, and photographing birds in the field. Papers of general interest will be considered regardless of their geographic origin, but particularly desired are reports of studies done in or bearing on the Rocky Mountain and Pacific states and provinces, including Alaska and Hawaii, western Texas, northwestern Mexico, and the northeastern Pacific Ocean.

Send manuscripts to Philip Unitt, 3411 Felton Street, San Diego, CA 92104. For matter of style consult the *Suggestions to Contributors to Western Birds* (8 pages available at no cost from the editor) and the *Council of Biology Editors Style Manual* (available for $24 from the Council of Biology Editors, Inc., 9650 Rockville Pike, Bethesda, MD 20814.

Reprints can be ordered at author's expense from the Editor when proof is returned or earlier.

Good photographs of rare and unusual birds, unaccompanied by an article but with caption including species, date, locality and other pertinent information, are wanted for publication in *Western Birds*. Submit photos and captions to Photo Editor.